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MASSACHUSETTS

CROP REPORT

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Growing beans, corn, tomatoes, lettuce and spinach.....August

Growing cabbage and cauliflower...June

Growing squashes, melons and cucumbers May

Mushroom growing.....October

Root crops of the market garden...July

Some of the essentials of beekeeping September

SERIES OF 1911. VOL. 24. NO. 1.

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MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF MAY, 1911.

GROWING SQUASHES, MELONS AND CUCUMBERS.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary*.

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

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Approved by
The State Board of Publication.

Crop Report for the Month of May, 1911.

Office of State Board of Agriculture,
Boston, Mass., June 1, 1911.

This bulletin is the first issue of the twenty-fourth volume of the series. The form of these bulletins will remain practically as in past years, with information as to crop conditions in Massachusetts and throughout the United States, weather conditions, list of publications, and special articles of timely interest. Suggestions as to improvements in the bulletins, of any kind, will be welcomed from our readers, and they are requested to call our attention to any subject or subjects they would like to see taken up in special articles.

The article for this month is by one of the most successful of our younger market gardeners, Mr. Henry M. Howard of West Newton, Mass., and deals with crops which are of interest to all from the extensive market gardener to the suburbanite, with his kitchen garden. The subject is "The growing and marketing of squashes, melons and cucumbers," and it has been treated in a very practical and exhaustive manner.

Progress of the Season.

The Crop Reporting Board of the Bureau of Statistics, United States Department of Agriculture, estimates that on May 1 the area of winter wheat to be harvested was about 31,367,000, or 1,940,000 acres (6.6 per cent) more than the area harvested in 1910, and 3,118,000 acres (9 per cent) less than the area sown last fall. The average condition of winter wheat on May 1 was 86.1, compared with 83.3 on April 1, 82.1 on May 1, 1910, and 86, the average of the past ten years. This condition, taken with the estimated area to be harvested, would indicate a total production 5.4 per cent more than the final estimate of production last year, 9.6 per cent more than the production of 1909, and 8.7 more than the average annual production of the past five years.

The average condition of rye on May 1 was 90, compared with 89.3 on April 1, 91.3 on May 1, 1910, and 89.7, the average of the past ten years.

The average condition of meadow (hay) lands on May 1 was 84.7, compared with 89.8 on May 1, 1910, and a ten-year average of 89.4. Stocks of hay on farms are estimated as 7,546,000 tons (12.4 per cent of crop), against 7,275,000 tons (11.2 per cent) on May 1, 1910.

The average condition of pastures on May 1 was 81.3, compared with 89.3 on May 1, 1910, and a ten-year average of 87.4.

Of spring plowing, 71 per cent was completed up to May 1, compared with 80.3 per cent on May 1, 1910, and a ten-year average of 67.2.

Of spring planting, 60 per cent was completed up to May 1, compared with 65 per cent and 51.9 per cent on May 1, 1910 and 1909, respectively.

In Massachusetts the average condition of rye was given as 84; of mowings, 84; of spring pastures, 77; the percentage of spring plowing completed as 25; percentage of spring planting done as 13; the amount of hay remaining on farms as 91,000 tons, and the percentage fed to stock owned on farm producing it as 85.

Weather Summary, Jan. 1 to May 1, 1911.

[Furnished by Weather Bureau, Boston.]

January: The month was not as cold as usual and was deficient in precipitation. There was much cloudiness, notwithstanding the light rainfall. The daily mean temperatures were generally above the average, and the monthly mean was about 5° above the normal. The snowfall of the month was remarkably light, the total not exceeding 2 inches in interior sections, and ranging from a trace to an inch along the coast. The weather as a whole was exceptionally pleasant, considering the season of the year.

February: Generally speaking the weather was cold, with precipitation near the average. The daily temperatures ranged very near the average, and the monthly mean was less

than 1° below the normal. There were no extremes in temperature, and the temperature did not fall below zero in any section. The snowfall was above the average, the excess ranging from 3 to 7 inches. At the close of the month, however, there was little snow on the ground. There was an average amount of sunshine.

March: The month was below the normal in temperature, but the deficiency was slight, less than a degree in most sections. The first week was considerably colder than the average, while for the rest of the month the distribution of temperature was quite irregular. The precipitation for the month was deficient, although the departures were generally less than half an inch. The snowfall was about normal for March. At the close of the month the ground was bare. There was the average amount of sunshine.

April: The month was somewhat colder than usual, the deficiencies ranging from a half a degree to a degree and a half below the normal. Over the greater portion of the State the precipitation was below the average, although there was somewhat more than the average amount of snowfall. There was a considerable amount of sunshine above the seasonal average. The temperature was unseasonably high during the last four days of the month, rising to 80° and above in nearly all sections. The month as a whole was very pleasant, but was from ten days to two weeks later than usual at its close.

Temperature and Rainfall for the Whole Country.

[From United States National Weekly Weather Bulletin.]

Week ending May 8. — Cold weather was the rule at the beginning of the week from the Rocky Mountains to the Mississippi valley. As the week advanced the high pressure area moved slowly eastward, and cold weather prevailed throughout the balance of the week over practically all districts from the middle of the Great Plains region eastward to the Atlantic coast. A rain area moved eastward from central Michigan during the week, accompanied by local showers over much of the country east of the Mississippi, with some heavy falls in the Gulf States and moderate amounts in the

lower Lake region. Local rains occurred over the north Pacific coast and northern Plateau region. There were other light rains in widely separated localities, but no other general storm area.

Week ending May 15. — During the first few days of the week the temperature over the Great Plains and the Mississippi valley increased, and the warm wave moved eastward, giving the highest temperatures of the season over portions of the Ohio, upper Mississippi and lower Missouri valleys, and by the middle of the week the warm wave had advanced eastward to the Atlantic coast. This was followed by cooler weather in the Great Plains by the middle of the week and to the more eastern districts during the latter part. No well-defined storm area crossed the United States during the week, and the precipitation was confined mostly to local thunderstorms. Considerable rain occurred over the Lake region and portions of the Missouri valley on the 11th, and quite heavy falls occurred in central and eastern Texas on the night of the 11th and 12th. During the remainder of the week only light showers occurred, at widely separated points.

Week ending May 22. — Southerly winds and warm weather prevailed over practically all the eastern portion of the country. By the middle of the week a warm wave of unusual severity was general over practically the entire eastern portion of the country. West of the Rocky Mountains cold weather prevailed, and this cool wave advanced into the Great Plains and Mississippi valley during the latter part of the week. With the beginning of the week local rains prevailed along practically the entire northern boundary, from New England to the Pacific coast, and light showers occurred at points in Florida and near the coast of Georgia and South Carolina. The total fall for the week ranged from about ½ inch to 2 inches, or slightly more, over much of the territory from eastern Texas northward to the Canadian boundary. There was practically no rain in the south Atlantic coast States, and little from the Ohio valley eastward to New England and the Atlantic coast.

Week ending May 29. — At the beginning of the week warm weather was general from the Mississippi valley east-

ward, the temperature during Monday being especially high in portions of New England and New York. A change to cooler weather occurred, however, over these districts during Tuesday, and on that and the following day or two the temperatures were moderate over most of the districts from the Rocky Mountains eastward, cool weather continuing over the Atlantic coast districts till near the end of the week. From the Rocky Mountains westward cool weather continued through the week. Near the middle of the week warm weather set in over the Plains districts, and on the 25th to 28th temperatures were unusually high throughout the Mississippi valley. At the beginning of the week showers prevailed in the Ohio, upper Mississippi and lower Missouri valleys and Lake region, moving eastward, and light, local showers prevailed over the greater part of the Middle Atlantic and New England States. The total precipitation for the week was small, generally less than half an inch, over much of the middle and lower Mississippi valley and west Gulf States, in the upper Ohio valley and lower Lake region, and along the entire Atlantic coast.

Special Telegraphic Reports.

[Weather Bureau, Boston.]

Week ending May 8. — New England. Boston: The weather was clear throughout the week. Rain is much needed. The temperature was low the first part, with frost and freezing weather, but the last part was warm.

Week ending May 15. New England. Boston: The week was fair, except for scattered local showers. Rain is much needed. The temperature averaged above normal, until the last of the week, which was cool, with frost in some localities.

Week ending May 22. — New England. Boston: Fair, warm weather prevailed, except that copious to heavy local showers fell on the 18th in central and western Massachusetts, and parts of Rhode Island and Connecticut. Rain is generally much needed.

Week ending May 29. — New England. Boston: Local showers occurred generally at the middle of the week, being

copious in some localities, but very light in others, where drought continues. The temperature was seasonable, with abundant sunshine.

The Weather of May, 1911.

The weather of the month was warm and exceptionally dry. The monthly mean temperatures over the State ranged from 3° to 5° above the May average, and the total rainfall was less than an inch in numerous localities, and less than 50 per cent of the normal in nearly all sections. The month opened with two warm days, during which the maximum temperatures ranged above 70° over the greater portion of the territory. The coldest weather of the month followed on the 3d and the 4th, with minimum temperatures ranging from slightly above to several degrees below freezing. A very warm spell prevailed from the 21st to the 23d, with the crest of the warm wave on the 22d, when the mercury rose above 90° in nearly all sections. The maximum temperature also ranged between 80° and 90° over a large portion of the State on the 7th, 8th, 11th, 12th and 13th. The temperature during the rest of the month was near the seasonal average. Notwithstanding the small precipitation of the month, rain fell on an average of twelve days, but the amounts were, of course, exceptionally small, in a number of instances only a trace. There was an abundance of sunshine. At the close of the month it was generally considered that the season was several days in advance of the average.

Publications, Nov. 1, 1910, to May 30, 1911.

As stated in the October, 1910, Crop Report, revised editions of Bulletins Nos. 1 and 2, entitled "Poultry Culture" and "Orcharding," respectively, were published in November. Bulletin No. 4, "Small Fruits and Berries," was issued also in that month. Copies of these bulletins are still available and will be sent to all applicants.

The special report, "Massachusetts: Her Agricultural Resources, Advantages and Opportunities, with a List of Farms for Sale," was issued November 29, and the entire edition of

3,500 copies was exhausted at noon, December 12. Since then we have received 2,500 applications, more than half coming from without the State. To meet this demand the Legislature has authorized the publication of a revised edition of 10,000 copies. Farms sold and withdrawn will be noted and 25 or 30 new farms for sale will be listed. The descriptive portion will remain unchanged. It is expected this edition will be ready for distribution some time in June. Applications for the catalog will be received and filled free of charge as soon as possible.

Advance sheets from the fifty-eighth annual report (1910) of the Board are available as follows: —

Twentieth annual report of the Dairy Bureau.
Ninth annual report of the State Nursery Inspector.
First annual report of the State Inspector of Apiaries, being Apiary Inspection Bulletin No. 2.

Reprints of a number of the Nature Leaflets have been made, but no new ones have been issued. A complete list of available publications will be mailed upon request.

In the circular to correspondents, returnable May 25, the following questions were asked: —

1. How does the present season compare, agriculturally speaking, with a normal season?

2. What is the promise for pastures and mowings, and did fall seeding winter well?

3. How did the bloom of apples, pears, peaches, plums and small fruits compare with the bloom of former years, and has it suffered from frosts?

4. What insects appear to be doing the most damage in your locality?

5. How is planting progressing?

6. Is farm help scarce or plenty, and what proportion can be called good help?

7. What are the average wages paid farm help in your vicinity, with board? Without board?

8. Will there be any marked changes in the acreage of the

usual farm crops, particularly corn and potatoes, and do you note any new enterprises in the line of agriculture?

Returns were received from 142 correspondents, and from them the following summary has been compiled: —

The Season.

The month opened cold and dry, but the weather became warmer as the month progressed, and by the middle of the month was unusually warm for the time of year. The drought continued almost unabated in eastern sections, up to the time of going to press, only slight showers breaking the continuous six weeks of drought, while western and central sections had heavy showers, but no continued rains. The warm weather brought the vegetation forward very rapidly and the season was fully normal at the close of the month, so far as vegetation was concerned. Early crops, on the other hand, were slow in germination, and did not come forward as rapidly as usual. The fruit bloom is reported by many correspondents to have come all at once, and the blooming period to have been very short.

Pastures and Mowings.

Grass started late, owing to the cold weather, and made but little growth up to the advent of the hot weather of the middle of the month. This pushed it forward rapidly, but owing to the drought the development was not what it should have been, and feed in pastures was generally short at time of making returns, while rain was imperatively needed if the hay crop was to be anything but short. Fall seeding appears to have suffered more from winterkilling than usual, partly because of the open winter, with the formation of ice on the fields, and partly because of poor condition at the opening of winter, due to the drought of last year. This condition does not, however, prevail in all localities, there being many reports of it having wintered well.

Fruit Bloom.

The fruit bloom was generally reported as unusually heavy, except, in a few instances, for winter apples, and more partic-

ularly Baldwins, which were sometimes noted as having a light bloom. The bloom came at about the usual time and was characterized by the condition noted above. Small fruits were not generally in bloom at the time of making returns, but generally promised well. There were no frosts to damage after the fruit buds began to open, in any section of the State, and at the time of making returns fruits were generally out of danger from anything except unusually heavy frosts, although ordinary freezing temperatures might still do considerable damage to strawberries and other berries.

Insects.

Insects appear to be rather more plentiful than usual. The most marked manifestation is the unusual number of cut worms reported in the eastern sections. A hot, dry spring is always favorable to these insects, and their unusual prevalence this season coincides closely with the districts where the rainfall has been almost entirely lacking. They are not unusually prevalent in central and western sections. In eastern sections they are very troublesome in gardens, and in some cases are reported as ruining early market-garden crops, like spinach and lettuce, on a large scale. Tent caterpillars also appear to be rather more numerous than usual all over the State. The gypsy and brown-tail moths continue to extend their territory. More correspondents than usual report the San José scale and that determined efforts are now being made to combat this pest. Other insects mentioned are currant worms, white grubs, wire worms, canker worms, potato bugs, elm-leef beetles, asparagus beetles, cabbage maggots and black flies.

Planting.

Planting was delayed by the cold and dry weather and in many sections was rather behind the normal, despite the favorable weather for farm operations; in others it was entirely completed and in advance of the usual condition. Germination of seeds was retarded by the drought, and there are many complaints that fields are not well stocked as yet. Tobacco setting had begun, or was about to begin, throughout the Connecticut valley.

Farm Help and Wages.

On the whole, farm help appears to be rather more plentiful than usual, but there is the usual complaint of the difficulty of securing really efficient help. This is an old trouble, and will always remain, both on the farm and elsewhere, for the really efficient soon work out of the class of wage workers. It is more noticeable on the farm than elsewhere because the farmer is brought into closer personal relations with his employees than is the manufacturer or merchant. Wages appear to be still moving upward. Last year we estimated $23 per month, with board, as the average wage paid, while this year $25 would seem to be nearer the true average of the wages reported. Thirty-five to $40 per month without board, but with tenement, milk and fuel, continues to be the general average of wages paid. One dollar and seventy-five cents per day seems to be the average of the reports of wages paid for day help, — a price too high for profitable employment in most sections.

Acreage of Farm Crops.

There will again be a marked increase in the acreage of corn grown for grain in the State as a whole, and a slight decrease in the acreage of potatoes. The increased attention being paid to corn culture is a hopeful sign in our farming, as it indicates that a large number of our farmers are looking for escape from western grains, with their high prices, and are taking the best way out for New England, in growing more corn. Considerable increase in the interest in fruit growing, especially apple growing, is noted, with a considerable number of new orchards being set. The acreage devoted to cranberries also shows a continued increase. Several reports come in of experiments with alfalfa, which show hopeful results, and we should be glad to hear of any other attempts in this direction, successful or otherwise.

NOTES OF CORRESPONDENTS.

(Returned to us May 25.)

BERKSHIRE COUNTY.

New Marlborough (E. W. Rhoades). — This is about a normal season, except that the ground is very dry. There is very little feed in pastures, and meadows are suffering from drought. Fruit trees bloomed full, as did small fruits, except where winterkilled. There are a few tent caterpillars and currant worms are hatching out. Planting is well under way, though there is still some ensilage corn to be planted. Farm help is scarce, but good help can be obtained. Wages average $25 per month, with board, and range from $40 upwards per month, without board. The acreage of potatoes will possibly be decreased, other farm crops about as usual.

Tyringham (Edward H. Slater). — The present season compares favorably with the normal. Pastures are getting quite dry; mowings are looking very well and fall seed is in very good condition. The apple bloom was rather light, but has not suffered from frosts. Very little corn has been planted as yet. Farm help is scarce, and about one-fourth the supply can be called good help. Wages average about $23 per month, with board; and range from $1.50 to $1.75 per day without board. There will be no marked change in the acreage of farm crops.

West Stockbridge (J. S. Moore). — The season is much in advance of last year. Pastures and mowings are looking well at present, but begin to show the effects of continued dry weather. All fruit trees made full blooms, with no damage from frost. Currant worms are the only insect complained of. Planting is well along and there has been no rain the past week. Farm help is very scarce and good, reliable help almost impossible to get. Wages range from $20 to $25 per month, with board, and from $1.50 to $1.75 per day, without board. Oats are nicely started, but it is too early to judge of other crops, though more rain would be appreciated.

Washington (E. H. Eames). — The season is two weeks later than the average. Fall seeding is in good condition; pastures and mowings about average. The fruit bloom was perhaps a little better than last year; no damage from frost. No insects have appeared as yet. Planting is progressing well. There is no good farm help and poor help is very scarce.

Richmond (Timothy B. Salmon) — The season is about ten days late. Pastures and mowings are small and backward and fall seeding did not winter well. There was about an average fruit bloom. Planting is progressing slowly. Farm help is scarce and about one-fourth of it good help. Wages average $30 per month, with board, and $1.75 per day, without board. There are no marked changes in the acreage of farm crops. We are having a very dry May and all crops are suffering from want of rain.

Hancock (B. H. Goodrich). — The season started late, but is now normal, owing to the warm weather of May. Pastures and mowings are in average condition, though winterkilled slightly; no fall seeding. Apples show a fair bloom, with Greenings heavy; pears light; plums good. Tent caterpillars are more numerous than for a number of years. Planting is progressing well. Farm help is scarce and half of it is good help. Wages average $25 per month, with board; and $1.50 per day, without board. No marked changes in the acreage of farm crops.

Windsor (Harry A. Ford). — The season is a week in advance of the normal. Grass looks finely and winterkilled but very little. All fruit trees are now in full bloom, with no damage from frost. Planting is not progressing very rapidly. Farm help is scarce, but that available is good help. Wages range from $20 to $30 per month, with board; and from $1.50 to $2 per day, without board. Some quite large fields of potatoes have been planted and some apple trees are being set out.

Cheshire (L. J. Northup). — The season compares favorably with the normal. The promise for pastures and mowings is good, but fall seeding did not winter well. Apple trees bloomed full, also plums, and they have not suffered from frost. Tent caterpillars are quite plenty. Planting is progressing finely, some having finished. Farm help is rather scarce, and good help more so. Wages average $25 per month, with board, and $35 to $40, without board. There are no marked changes in the acreage of farm crops. The mercury stood at 100° F. in the shade on May 22.

Williamstown (S. A. Hickox). — The season is full up to the normal. Pastures and mowings promise well, but fall seeding did not winter well. There was a full bloom of all fruits and no frost. Planting is progressing well. Farm help is scarce and one-third of it is good help. Wages average $30 per month, with board, and $40 per month, without board. There are no marked changes in the acreage of the usual farm crops, but more attention than formerly is being paid to apple culture.

FRANKLIN COUNTY.

Charlemont (J. M. J. Legate). — The season is two weeks late. Pastures are doing well, but mowings winterkilled, and fall seeding is thin, owing to the open winter. There is about an average fruit bloom

and we have had no frosts. Planting not half completed. Farm help is scarce and mostly good help. Wages average $25 per month, with board, and $35, without board. There are no marked changes in the acreage of farm crops.

Colrain (W. H. Davenport). — The season is a little late, but so far promises well. Mowings winterkilled somewhat, but the general outlook for grass is good. The fruit bloom was about average, with no damage from frosts. Tent caterpillars are exceptionally plentiful and destructive. Planting is progressing rather slowly. Help is very scarce and wages high, but the quality is fairly good. One man is paying $39 per month, with board, and $1.75 per day and dinner is a common rate. The acreage of farm crops will be curtailed for lack of help. There is much orchard setting here.

Bernardston (R. H. Cushman). — The season is about normal, although the fruit bloom is a week to ten days early. Pastures and mowings are improving, though there are many spots that are winterkilled; fall seeding is in good condition. There was a good average fruit bloom, with no frosts. Tent caterpillars are doing some damage. Planting is well along, but there is more to be done. There seem to be more Americans willing to work on farms than usual. Wages range from $20 to $30 per month, with board, and from $1.50 to $1.75 per day without board. There is nothing new in agriculture here.

Ashfield (Albert Howes). — The season is very late and dry. Pastures and mowings need rain badly and fall seeding is in very poor condition. Insects are not doing much damage. Planting is a little backward, but progressing well now. Farm help is very scarce, but two-thirds of it is good help. Wages range from $18 to $25 per month, with board, and from $1.75 to $2 per day, without board. There will be a slightly increased acreage of corn; other crops about as usual.

Whately (C. L. Crafts). — The season is more backward than usual. Pastures and fall seeding are in poor condition, from lack of rain. Fruit blossomed well and we have had no frosts. Wire worms are doing some damage. Planting is about completed and tobacco setting has commenced. There is enough farm help, mostly Poles, but it is not extra good. Wages range from $20 to $28 per month, with board and from $30 to $45, without board. Corn and potatoes have about the usual acreage, but there is a heavy increase in the acreage of onions. Water is scarce and the ground very dry.

Montague (A. M. Lyman). — The season started late, but has caught up fairly well. The promise for pastures and mowings is good if we have rain soon; fall seeding wintered well. There was a good average fruit bloom, with no frost as yet. Cut worms are very plenty and potato bugs. Planting is now in full swing. Farm help is plenty, good help scarce. Wages average from $20 to $25 per month, with board, and from $35 to $40, without board. There is an increased interest in corn.

Northfield (T. R. Callender). — This is the dryest spring ever

known. All grass lands are looking poorly, but fall seeding is in fair condition. There was an average fruit bloom with no late frosts. Cut worms are unusually numerous in gardens. Farm help is scarce, mostly Poles, and generally good. Wages range from $20 to $30 per month, with board, and from $1.75 to $2 per day, without board. There is no particular change in the acreage of farm crops. Late forage crops must be grown to supplement the short hay crop.

Erving (Charles F. Clark). — The season is an average one. The promise for pastures and mowings is favorable and fall seeding wintered well. The fruit bloom is above the average and there has been no damage from frost. Insects are doing little damage. Planting is progressing slowly. Farm help is scarce and half of it is good help. Wages average $25 per month, with board, and $1.75 per day, without board. There is no marked change in the acreage of farm crops.

New Salem (Daniel Ballard). — The season was cold, dry and backward, but vegetation is pushing forward rapidly since the hot spell. With good rains the hay crop will be normal; fall seeding wintered well. There was a heavy fruit bloom, especially of apples and pears. No great damage has been done by insects. Planting is progressing slowly. Farm help is rather scarce, but perhaps half of it is good help. Wages average $1 per day, with board, and $1.50 per day, without board. There are no changes in the acreage of farm crops. Forest fires have been frequent and much damage has been done.

HAMPSHIRE COUNTY.

Greenwich (Walter H. Glazier). — The season is two weeks late. Pastures and mowings are looking well now and fall seeding came through the winter nicely. There is a fair apple bloom; other fruits not grown; no damage from frost. But little planting has been done, but much of the land is ready. There are a few tent caterpillars doing damage. Wages for farm help average about $1.50 per day. The acreage of corn and potatoes is about the same as usual. There have been a large number of railroad forest fires this spring; damage about $15,000.

Belchertown (A. L. Pratt). — The season is very dry. Pastures and mowings are looking slim, but fall seeding wintered well. The fruit bloom was favorable and has not suffered from frost. Tent caterpillars are doing damage on apple trees. Planting is progressing well. Farm help is scarce and half of it is good. Wages average $1 per day, with board, and $1.50 per day, without board. There is no particular change in the acreage of farm crops.

Amherst (Wm. P. Brooks). — There is a marked deficiency of rainfall, and for past two weeks abnormally high temperatures. Pastures and mowings are in poor condition, owing to dry weather and heat; fall seeding wintered well. Apple bloom medium; pears, peaches and

plums normal; small fruits, except currants, not yet in bloom. Currant worms are the only insect doing damage on cultivated ground, but tent caterpillars have appeared on the wild cherry trees. Planting is progressing rapidly. Farm help is scarce, mostly Polish, and good, though inexperienced. Wages range from $20 to $30 per month, with board, and from $1.50 to $1.75 per day, without board. The acreage of onions is increased, and that of shade grown tobacco is much increased, one grower having thirty acres under tent.

Hadley (H. C. Russell). — The season is ten days late. Fall seeding is in good condition, and owing to dry weather the hay crop bids fair to be light. There is a very heavy bloom on all kinds of fruit and no frosts or insects to do damage. Considerable corn has been planted and a few potatoes. There is farm help enough for present needs and three-fourths of it is good. Wages average $22 to $24 per month, with board, and $1.50 per day, without board. There is no particular change in the acreage of farm crops. Onions are coming up very well. Tobacco setting will begin next week.

South Hadley (W. F. Person). — Pastures are very poor, also mowings, but fall seeding looks well. The bloom of all fruit is full, more than an average, with no frost. Planting is very late, not much having been done. Farm help is scarce and about a third of it good. Wages are from $25 to $30 per month, with board, and about $1.75 per day, without board. There is no special change in the acreages of farm crops.

Hatfield (Thaddeus Graves). — We are now suffering a bad spring drought. The prospect for pastures and mowings is poor unless we have rain soon. The fruit bloom was fine and promises well. May 12th is the time to close planting here and corn is now four inches high. Farm help is fairly plenty and about one-fourth of it good help. Wages average $1 per day with board and $1.50 without board. There is little change in the acreage of farm crops. Early sown onions look finely, but those later sown did not come up well, and in many cases are plowed up for other crops. Tobacco plants are ready to set and many are now setting.

Easthampton (Wm. C. Clapp). — The season is later than usual. Pastures and mowings need rain and fall seeding looks fairly well. There was from one-half to three-fourths of a full fruit bloom; no damage from frost. Tent caterpillars and cut worms are doing some damage. Planting is rather backward. Farm help is not plenty and three-fourths of the supply is good help. Wages are from $1.50 to $1.75 per day, without board, and from $20 to $26 per month, with board. There will be no marked change in the acreage of farm crops.

Chesterfield (Horatio Bisbee). — The season is hardly up to the average. Pastures are poor and mowings winterkilled more or less. The apple and pear bloom was good. Tent caterpillars are doing some damage. Planting is progressing fairly well. Farm help is not plenty,

nor very good. Wages average $20 per month, with board, and $1.50 per day, without board. More corn than usual is being planted.

Goshen (Geo. L. Barrus). — The season is normal, except that farm work is about two weeks late. Pastures and mowings are well started and fall seeding wintered fairly well. The fruit bloom is above the average and no frosts. Tent caterpillars are doing the most damage of any insect at present. Planting is going ahead rapidly now. There is no loose farm help, good or bad. Wages average $25 per month, with board, and $1.75 per day, without board. There are no changes in the acreage of farm crops.

HAMPDEN COUNTY.

Blandford (Enos W. Boise). — The warm weather has brought forward the season and at present it is fully normal. Lack of rain causes grass and pastures to be short; fall seeding is looking fairly well. All fruits have bloomed full, with no frost damage. Tent caterpillars are more plenty than usual. Planting is well along. Farm help is scarce and not over one-fourth good help. Wages average from $20 to $25 per month, with board, and $1.75 to $2 per day, without board. More corn for grain will be planted than usual and alfalfa is receiving some attention.

Russell (E. D. Parks). — The season is further advanced than normal, but the drought has been severe. Pastures and mowings are looking well on wet ground, but otherwise are very dry. The fruit bloom was very favorable, with no frosts to do injury as yet. Tent caterpillars and currant worms are doing some damage, also elm leaf beetles. Planting is mostly completed. There is plenty of poor help. Wages range from $20 to $25 per month, with board, and from $1.75 to $2 per day, without board. There is no great change in the acreage of farm crops, but there is a good deal of interest in setting out fruit trees, especially apples.

West Springfield (T. A. Rogers). — Grass and planting are late and it has been very dry. Fall seeding wintered well. Apples and peaches made a full bloom; pears and plums not full; berries not in bloom as yet. There is some insect cutting the leaves from the maples. But little planting has been done as yet. The supply of farm help is about as in the past few years. Wages range from $20 to $30 per month, with board, and from 15 to 20 cents an hour, without board. There are no changes in the acreage of farm crops.

Agawam (J. G. Burt). — The season is not quite up to the normal. Pastures and mowings are short and dry, but fall seeding wintered well. There was a full bloom of all fruits, and no damage from frosts. No insects have appeared as yet. Planting is progressing slowly. Farm help is scarce and not over half of it good help. Wages average $28 to $30 per month, with board, and $1.75 per day, without board.

There is no great change in the acreage of the usual farm crops. One farm has 150 acres of tobacco under cloth.

Chicopee (E. L. Shaw). — The season has been backward, cold and dry, but is coming forward rapidly now. Pastures and mowings are slow, for want of sufficient rain, and fall seeding did not winter well. There was generally a very full fruit bloom, especially apples. There is not much injury from insects as yet. Potatoes are all planted and some corn; everybody very busy on account of lateness of the season. Farm help is scarce and only a small part of it can be called good. Wages average $25 per month, with board, and $40 without board. There is rather more market-gardening being done than usual.

East Longmeadow (John L. Davis). — The season was dry and cold early, but hot and dry later. Pastures and mowings lack moisture and fall seeding winterkilled somewhat. All fruit had a good bloom. Cut worms, wire worms and white grubs are doing damage. Planting is progressing very rapidly. There is about the average supply of farm help of fair quality. Wages average $20 per month, with board, and $1.75 per day of 9 hours, without board. There will be an increased acreage of corn. There is a good looking field of alfalfa in town.

Wilbraham (H. M. Bliss). — The season is ten to fifteen days late. Pastures and mowings are very dry and backward, and fall seeding did not winter well. All kinds of fruit trees blossomed well. Planting is progressing very slowly. Farm help is scarce and 75 per cent of the supply is good help. Wages average from $20 to $25 per month, with board, and $1.50 per day, without board. There is an increased acreage of corn.

Monson (F. D. Rogers). — The season is a normal one. Well cared for mowings are looking well, but old fields and pastures are suffering from the drought. Most fruit trees blossomed full, except Baldwin apples, which are light. Tent caterpillars and cut worms are working some, but not seriously. Planting is well along, except corn, and most of that will go in next week. There seems enough farm help to go around, but good help is scarce. Wages range from $20 to $25 per month, with board, and from $1.50 and $1.75 per day and $30 to $35 per month, without board, but with tenement, wood, etc. There will be more corn planted than usual.

Brimfield (F. N. Lawrence). — The spring was backward and has since been dry, with very little rain for six weeks. Pastures and mowings are very dry. The apple bloom is not as full as two years ago; pears, peaches and plums full, with no frost as yet. Tent caterpillars are plentiful this year. Very little fall seeding has been done as yet, on account of the backward spring and dry weather. Less potatoes will be planted than usual, other crops about normal.

WORCESTER COUNTY.

Charlton (Loren E. Stevens). — Everything is from ten days to two weeks later than usual. Pastures and mowings are in fair condition. There have been no late frosts; apples show little bloom, other fruit trees as usual. Tent caterpillars and elm leaf beetles are doing some damage. Planting is progressing slowly, as it is very dry. Farm help is scarce, with little good help. Wages average $30 per month, with board, and $1.75 per day, without board. Potatoes have been so cheap that there will be fewer than usual planted.

North Brookfield (John H. Lane). — Cultivated crops are late. Pastures and mowings are late and dry. The bloom of fruits was good, with no damage from frosts. Tent caterpillars are abundant. Planting is progressing very slowly. Farm help is very scarce and 25 per cent is good help. Wages average $25 to $30 per month, with board, and $1.75 per day, without board. The acreage of potatoes will be decreased and that of corn increased.

Oakham (Jesse Allen). — The season is a fair average one to date. Pastures and mowings look well since the rain and fall seeding wintered well. The bloom of apples and peaches was light, that of pears very full, and small fruits a fair average. Tent caterpillars are doing some damage. Planting is nearly completed. Farm help is scarce and half of it good help. Wages average from $20 to $30 per month, with board, and from $30 to $40, without board. There will be no marked change in the acreage of the usual farm crops.

Templeton (Lucien Gove). — The season is unfavorable, the severe drought this spring having created a poor outlook. Pastures are very short, grass in mowings thin, and fall seeding not in good condition. Fruit bloom up to the normal, with no damage from frost. Tent caterpillars and cut worms are doing a limited amount of damage. Cold weather and drought makes planting late. There is no particular change in the quantity or quality of farm help. Wages range from $15 to $20 per month, with board, and from $30 to $35, without board. There will be a greater acreage than usual to corn, and increased attention given to forage crops.

Royalston (C. A. Stimson). — The season is early. Many complain of lack of rain for pastures and mowings; fall seeding wintered well. There was a full bloom of all fruits and no damage from frost. Tent caterpillars are doing some damage. Planting is progressing well. Farm help is scarce and one-fourth of it is good help. Wages average $25 per month, with board, and $1.75 per day, without board. There are no marked changes in the acreages of farm crops.

Ashburnham (E. D. Gibson). — The season is generally backward, except for farm work, which is early. Pastures very backward; old mowings very light; some fall seeding winterkilled. There is a fair bloom on all kinds of fruit. There are some brown-tail moths and a

few small nests of tent caterpillars. Planting is progressing fairly, though much remains to be done. Farm help is very scarce, and not one-fourth of it good help. Wages average $1.50 per day, without board, $18 per month, with board, and $35 per month, without board. The acreage of potatoes is very much decreased. Yesterday we had the first rain to do much good for many weeks.

Fitchburg (Dr. JABEZ FISHER). — Vegetation is early and everything looks ready if rain comes. The winter was favorable to pastures and mowings, but rain is imperatively needed. There was a full bloom of pears and plums, less of apples. Cut worms are doing some damage. Planting is waiting for rain. Farm help is scarce, with a small proportion of it good help. Wages average $20 per month, with board, and $1.75 per day, without board. There are no notable changes in the acreage of farm crops.

Sterling (HENRY S. SAWYER). — The season is several days late on account of the dry season; no rain for several weeks. Grass has not started very much in pastures and mowings; fall seeding wintered fairly well. There was very good bloom of all fruits in this locality. Brown-tail moths, tent caterpillars and currant worms are doing damage. But little planting has been done, on account of dry weather. Good farm help is very scarce. Wages average $25 per month, with board, and $1.80 per day, without board. More corn will be raised than usual.

Bolton (H. F. HAYNES). — The season is dry. Pastures and mowings are in poor condition, and fall seeding did not winter well. The bloom of fruit trees was good, with no damage from frost. No insects are doing damage as yet. Planting is progressing slowly. Farm help is scarce. Wages range from $20 to $25 per month, with board, and average $40, without board. There are no marked changes in the acreage of the usual farm crops.

Northborough (JOHN K. MILLS). — The season is a little ahead of last year. It has been so dry that mowings and pastures have been poor; fall seeding came through the winter all right. There has been a full bloom of all fruit trees. Cut worms, brown-tail moths and tent caterpillars are doing damage. Crops are being planted with a rush. There is but little good help. Wages average $25 per month, with board, and $2 per day of 9 hours, without board. There will be a full acreage of corn and potatoes. There will be quite an increase in the acreage set to asparagus.

Leicester (H. H. KINGSBURY). — At this date everything seems to be in normal condition, agriculturally speaking. Grass has made a great growth in the past ten days, and fall seeding wintered well. The bloom of all kinds of fruits and berries has been very full, with no damage from frost. The tent caterpillar is the most numerous of any insect in this section. The situation in regard to farm help is much as it has been for five years past. The wages paid may be rather

higher than formerly, certainly they are no lower. There is no change noted in the acreage of any of the leading farm crops.

Auburn (Wm. Gilbert). — The ground is unusually dry, too dry to plow. Pastures and mowings promise a light crop; fall seeding wintered well. All kinds of fruit trees blossomed full, and there has been no frost. Tent caterpillars and cut worms are unusually plentiful. Planting has been delayed on account of the dry weather. Farm help is very scarce, and not more than 25 per cent of it is good help. Wages average $25 per month, with board, and $2 per day, without board. There will be an increased acreage of field corn and a decreased acreage of potatoes; a few are trying alfalfa.

Mendon (James J. Nutter). — There is no particular difference noticeable from other seasons. Pastures and mowings are not looking promising. The fruit bloom was not as good as last year, especially apples. Elm leaf beetles are doing some damage. Farm help is scarce and only a small proportion of it is good help. Wages average $18 to $20 per month, with board. There are no special changes in the acreage of farm crops.

MIDDLESEX COUNTY.

Hopkinton (W. V. Thompson). — The season is dry, but seeds are coming up well. Pastures and mowings are poor and dry; fall seeding wintered well, but needs rain. There was a half bloom on apples, and a full bloom of pears, peaches and plums; no frost to do damage. Tent caterpillars, brown-tail moths and white grubs are doing damage. Planting is a little backward. Farm help is about as usual. Wages average 20 cents per hour, without board. Acreage of farm crops about as usual; petsai and alfalfa are being experimented with.

Marlborough (E. D. Howe). — The season compares very unfavorably with the normal. Pastures and mowings need rain sadly; fall seeding wintered well, but is making no growth. Apple bloom, 50 per cent; pears, 75; peaches, 90; plums, 90; small fruits, 95; San José scale and tent caterpillars are doing damage. Planting is well along, but not half the seed is sprouting. Farm help is fairly plenty, and about one-third of it can be called good. Wages average $27 per month, with board, and $45 per month, without board. There will be an increased acreage of corn.

Stow (Geo. W. Bradley). — The season is a little more forward than usual in some respects, but is needing rain at present. Pastures and mowings do not promise well, owing to drought. The fruit bloom was a little above the average, with no damage from frost. Brown-tail moths, tent caterpillars and cut worms are doing damage. Planting is nearly finished, except for some field corn and late garden stuff. Farm help is very scarce and poor. Wages range from $15 to $30 per month, with board, and from $1.50 to $2.50 per day, without board. More potatoes are being planted than last year, and perhaps a little more corn.

Townsend (Geo. A. Wilder). — The season is below the average, agriculturally speaking. Pastures and mowings do not promise well. There was an average fruit bloom and no injury from frost. Codling moths and rose bugs are doing some damage. Planting is backward. Farm help is scarce. Wages average $20 per month, with board, and from $1.50 to $1.75 per day, without board. There are no changes in the acreage of the usual farm crops.

Dunstable (A. J. Gilson). — The season is much below the normal, and all kinds of seeds are nearly ruined by the dry and hot weather. Pastures and mowings are backward; fall seeding wintered very well. All fruit trees except Baldwin apples had a full bloom; small fruits light; no frost to injure them. Asparagus beetles, cut worms, brown-tail moths and tent caterpillars are doing damage. Planting is progressing slowly. Farm help is very scarce. Wages range from $20 to $26 per month, with board, and from $1.50 to $1.75 per day, without board. From present indications the acreage of the usual farm crops will be about as formerly.

Billerica (E. F. Dickinson). — The season was first cold and then warm, but we have had a drought for the past six weeks. Pastures and mowings are very dry; fall seeding wintered fairly well. Apple bloom half normal; pears, three-fourths; peaches, full; plums and small fruits, good; no frosts to do damage. Tent caterpillars and brown-tail moths are doing damage, and gypsy moths are just coming out. The weather has been fine for planting, but there is too little moisture for germination and growth. Farm help is rather more plenty than usual. Wages average $25 per month, with board, and $1.75 per day or $40 per month, without board. Much corn will be planted and fewer potatoes than usual; market-gardening is increasing in this section.

Concord (Wm. H. Hunt). — April was quite cold, but of late it has been hot and dry. Fall seeding came out well, but pastures and mowings on light land are suffering from drought. The fruit bloom is not as full as in some years. Elm leaf beetles are more abundant than last year, other troublesome insects about average. Planting is progressing rapidly. Good farm help cannot be called plenty. Wages average $25 per month, with board, and $45, without board. The relative acreage of the different crops is about the same as usual.

Lexington (Howard M. Munroe). — The season, so far, is not favorable. Most pastures are dry and grass not starting well; neither mowings nor fall seeding promise a full crop, though fall seeding wintered fairly well. The apple bloom was lighter than for the last two years; pears a full bloom; peaches more than a full bloom; plums a fair bloom; season very favorable for the setting of fruit. Cut worms, brown-tail moths, tent caterpillars, gypsy moths and San José scale are prevalent, in the order named. About the usual amount of planting has been done, but some must be replanted owing to the work of cut worms. Farm help is scarce and not one-half of it is good help. Wages

average $24 per month, with board, and $40, without board. The acreage of corn will be increased and that of potatoes decreased. Cut worms are doing more damage than usual. Streams and ponds are extremely low.

Winchester (S. S. Symmes). — This is not a normal season, no rain this month and extreme heat. Pastures and mowings are very dry; fall seeding nearly killed out. The fruit bloom was very heavy, but the setting of fruit was very small. Cut worms have become a great pest and are doing heavy damage. Planting has gone ahead uninterruptedly, as the whole month has been fair. Help is very plenty, but about half of it is incompetent. Wages average $25 per month, with board, and $9 to $10 per week, without board. Cut worms are so numerous that many fields of spinach and lettuce have been entirely destroyed and some fields of peas nearly ruined.

Weston (Henry L. Brown). — Fall seeding wintered well; all pastures and mowings are making good growth. There is a very full bloom of fruit with no damage from frost. Brown-tail and gypsy moths are doing some damage and there is some complaint of cut worms. Planting is progressing well. Farm help is scarce and only a small proportion of it good help. Wages average $25 per month, with board, and $1.75 to $2 per day, without board. Less potatoes than usual are being planted.

ESSEX COUNTY.

Salisbury (Wesley Pettengill). — The season is unusually dry. At this time pastures are in very poor condition and mowings small. There was a fair, but not a great bloom of apples; pears, peaches and plums good blooms; no frosts. Tent caterpillars and brown-tail moths are doing damage. Planting is progressing slowly. Good help is scarce, about 25 per cent of the supply being good. Wages average $25 per month, with board, and from $1.50 to $1.75 per day, without board. About the usual farm crops will be grown.

Methuen (Frederick A. Russell). — The season is considerably below the normal, owing to lack of rain. Pastures and mowings are in very poor condition; fall seeding wintered well, but clover killed out badly. There is a light bloom on apples; pears, peaches and plums heavy; strawberries winterkilled somewhat; no damage from frost. Tent caterpillars, brown-tail moths, gypsy moths and cut worms are doing damage. Planting is about as far advanced as usual, but seeds are germinating poorly. Good farm help is very scarce, but poor help is plenty. Wages average $25 to $30 per month, with board, and $1.50 to $2 per day, without board. Very little change is observed in the acreage of farm crops.

Rowley (D. H. O'Brien). — The season is backward, owing to the late spring. Pastures and mowings are very poor; fall seeding

wintered well. Apples are about 25 per cent of a normal bloom; other fruits average. Gypsy moths, tent caterpillars and cut worms are doing damage. Planting is progressing very slowly. There is a medium supply of fair help. Wages average $25 per month, with board, and $1.50 per day, of 9 hours, without board. There are no marked changes in the acreage of farm crops. Many vegetable seeds failed to germinate on account of the dry weather.

Topsfield (B. P. Pike). — The season is below the average. Pastures are very short and mowings poor; fall seeding wintered fairly well. There was 60 per cent of a full fruit bloom. Brown-tail and gypsy moths are doing damage. Planting is progressing normally. Farm help is scarce and 10 per cent of it is good help. Wages average $25 per month, with board, and $1.75 per day, without board. There was less than the usual acreage of farm crops.

Hamilton (Geo. R. Dodge). — The season is backward. Pastures and mowings are short; fall seeding wintered fairly well. Summer and fall apples, stone and small fruits bloomed full, but the outlook for winter apples is not promising. Tent caterpillars and cut worms seem more numerous than in recent years. Planting is progressing slowly, much remaining to be done. Help seems to be in about the usual supply and of about the usual quality. Wages average $1.25 per day, with board, and $1.75, without board. Perhaps there will be a slight increase in the acreage of field corn. I hear of some who will try seeding to alfalfa this summer.

Danvers (Charles H. Preston). — The season is backward, on account of dry weather. Pastures and mowings are poor; fall seeding wintered well. The fruit bloom was fair, with no damage from frosts. Brown-tail moths, cut worms, tent caterpillars and canker worms are doing damage. Planting is backward because of dry weather. Farm help is scarce. Wages average $25 per month, with board, and $43, without board. There is no special change in the acreage of farm crops. Much seed has failed to germinate and what has come up has made little progress.

NORFOLK COUNTY.

Cohasset (Ellery C. Bates). — The season is normal. Pastures and mowings promise poorly, unless we have rain soon; fall seeding wintered well. There was a good fruit bloom and no damage from frosts. Cut worms are doing damage. Planting is progressing well. Farm help is scarce, but two-thirds of it is good help. Wages average from $20 to $25 per month, with board, and from $1.50 to $1.75 per day, without board. There will be no marked change in the acreage of any farm crop.

Randolph (Rufus A. Thayer). — The season is very dry, cold and backward. Pastures and mowings show very small growth, except on rich, moist land. There was a very heavy fruit bloom. Tent

caterpillars are doing some damage. Garden crops remain to be planted, corn and potatoes being about all in. Farm help is in moderate supply, and there are very few good men after work. Wages range from $20 to $25 per month, with board, and from $30 to $50 per month and from $1.50 to $2 per day, without board. There are no marked changes in the acreage of farm crops.

Canton (Edwin V. Kinsley). — Vegetation is as forward as usual. Pastures look well; mowings promise light crops; fall seeding wintered well. There was an exceptionally full bloom on all fruits, especially on apples and pears. Cut worms and tent caterpillars are quite prevalent. Planting is a little backward, but the seed sown has germinated very well. Farm help is scarce and poor. Wages average $25 per month, with board, and from $1.75 to $2 per day, without board. There will be more corn than usual planted. Streams are failing fast.

Norfolk (A. D. Towne). — The season is about two weeks late and very dry. Twenty per cent of the fall seeding winterkilled; pastures light. Bloom of apples and pears light, that of peaches and plums full. Tent caterpillars are more numerous than usual. Potatoes are nearly all planted and corn about one-third. Farm help is scarce and half of it can be called good. Wages average from $25 to $28 per month, with board, and from $1.75 to $2 per day, without board. Corn and potatoes show about the usual acreage; oats, with or without peas, for forage, double the acreage usually planted. The San José scale has killed many trees and seriously damaged many more. Gypsy moths have been found in forty orchards.

Franklin (C. M. Allen). — The season is a normal one. The promise for pastures and mowings is good; fall seeding wintered poorly. There is an average bloom of fruit and no damage from frost. Codling moths are doing damage. Planting is completed. Farm help is scarce. Wages average $25 per month, with board, and $2 per day, without board. More corn and potatoes than usual have been planted.

Millis (E. F. Richardson). — The season is dry but farm work is well advanced. Pasturage is dried up and fall seeding looks badly. The fruit bloom is average, with no damage from frost. Insects have done no damage as yet. Planting is a little backward. Farm help is scarce and a little more than half of it good help. Wages average $25 per month, with board, and $48, without board. There will be less potatoes and more corn than usual planted.

BRISTOL COUNTY.

Easton (Wm. N. Howard). — The season is far below the normal, on account of drought. Upland mowings will give a small crop; fall seeding wintered well. The apple bloom was very good. Cut worms are doing damage. Planting is progressing well. Farm help

is reasonably abundant, but good help is scarce. Wages range from $25 to $30 per month, with board, and from $40 to $50, without board. Many crops are in bad shape, owing to poor seed, extreme drought, and cut worms, which are extremely numerous.

Mansfield (E. Jasper Fisher). — The season is very backward. Pastures are in fair condition and mowings are good on low land; fall seeding wintered well. The fruit bloom was rather above the average, though Baldwin apples did not do well; little damage from frost. The elm leaf beetle is doing damage. Planting is nearly completed. Farm help is very scarce, mostly Italians. Wages range from $1.50 to $1.75 per day, without board. Not much corn has been planted, and about the usual acreage of potatoes.

Attleborough (Isaac Alger). — The season is above the average. Pastures, mowings and fall seeding are all in good condition. The fruit bloom was abundant, with no damage from frosts. No damage from insects as yet. Planting is a little backward, but coming along all right. The supply of farm help is about as usual. Wages average $25 per month, with board, and $1.50 per day, without board. There will be more corn grown and less potatoes than usual.

Seekonk (John W. Peck). — The season is a little backward, but the recent showers and very warm weather will bring crops nearly to the normal. Pastures are good and mowings look finely; fall seeding looks well. All fruits bloomed well and the prospect is good for good yields. Cut worms are doing some damage and the cabbage maggot is just appearing. Planting is progressing rapidly. Farm help is plenty and the greater proportion of it good. Wages average $25 to $28 per month, with board, and range from $8.50 to $10.50 per week, without board. The acreage of corn and potatoes is a little increased.

Berkley (Rollin H. Babbitt). — Growing crops are about ten days late. Pastures and mowings promise well if rain comes soon; fall seeding wintered well. The fruit bloom is above the average, with not much damage from frost. Insects have done little damage. Planting is progressing unusually well. Good help is scarce, three-fourths of the supply being poor. Wages range from $20 to $25 per month, with board, and from $1.50 to $1.75 per day, without board. There will be less potatoes grown than usual and more corn. Our people are setting out an increased number of fruit trees, especially apple trees.

Acushnet (M. S. Douglas). — The season compares favorably with the normal. Pastures and mowings are looking well and fall seeding wintered well. All fruit blossomed very heavily; no damage from frosts. Cut worms are doing some damage. Planting is a little backward, on account of cold weather the first of the month. There is plenty of help to be had, but it is inexperienced. Wages average from $1.50 to $1.75 per day, without board. The acreage of farm crops is about as usual, except corn, more of which is planted every year.

PLYMOUTH COUNTY.

Brockton (Davis Copeland). — The season is about an average one. Pastures and mowings are drying up on high lands, low lands are better; fall seeding wintered fairly well. The fruit bloom compares well with the normal. Black flies and tent caterpillars are doing damage. Planting was late in beginning, but we are pushing it along now. Farm help seems to be plenty, but only a small proportion of it is good. I think there will be more Indian corn planted than usual.

Halifax (Mrs. George W. Hayward). — The season is late, having been cold and dry. Pastures and mowings do not promise very good crops. All fruit trees bloomed full, with no damage from frost. Elm leaf beetles and tent caterpillars are doing damage. Corn and potatoes are nearly all planted and some gardens. Farm help is scarce and not good. There will be an increased acreage of corn and a decreased acreage of potatoes.

Plympton (Winthrop Fillebrown). — The season is very dry and some days unseasonably warm. Pastures and mowings are backward; fall seeding wintered well. There was an abundant bloom on all fruits, with no frosts since blooming. Elm leaf beetles and tent caterpillars are especially in evidence. Planting is very backward. Farm help is scarce and 40 per cent of it is good help. Wages average $30 per month, with board, and $2 per day, without board. About the usual acreage of farm crops will be planted. An orchard of 1,000 apple trees is being set out here this spring, with the prospect of future additions.

Carver (J. A. Vaughan). — There has been but little rain here and trees were about a week later than usual in blooming. Pastures and mowings promise well, and fall seeding wintered well. There was a full fruit bloom and no damage from frost. Tent caterpillars are doing some damage. Planting is progressing very well. Average farm help is plenty. About all help is hired by the day, without board, and at average wages of $1.65. There are no marked changes in the acreage of farm crops.

Rochester (Geo. H. Randall). — The season has been about four weeks late, but is now nearly normal. Pastures and mowings promise fairly well and fall seeding wintered well. There was a very general fruit bloom, with frost in some localities, but probably little damage. Tent caterpillars are more numerous than for several years. Planting is progressing very rapidly now, having been much delayed by cold weather. Good help is very scarce and other help not very plenty. Wages average $20 per month, with board, and from $35 to $40, without board. There is some increase in the acreage of corn and less potatoes planted than usual. Peach buds winterkilled in some localities.

Mattapoisett (E. C. Stetson). — The season promises very well at present. Pastures and mowings are in good condition and fall seeding wintered well. The fruit bloom was much above the average, with no damage from frosts. Cut worms and little black flies are doing damage. Planting is progressing very well. Farm help is fairly plenty, and most of it is quite good. Wages average $25 per month, with board, and from $35 to $40, without board. There will be rather more corn grown than usual.

BARNSTABLE COUNTY.

Falmouth (D. R. Wicks). — The season has been very cold and backward and is two weeks behind the normal. Pastures are late, but good mowings are looking well, though rain is needed. Tree fruits of all varieties bloomed full and small fruits are promising. Tent caterpillars and currant worms are doing damage. Planting is well along and crops have come up well. Native farm help is scarce, plenty of Portuguese, but they are poor help. Wages average $1.50 per day and 25 cents per hour, without board. Corn and potatoes will show an increased acreage.

Mashpee (W. F. Hammond). — The season is about ten days late. The promise of pastures and mowings is below the average, but fall seeding wintered well. Apples, pears, peaches and small fruits all bloomed above the average and have suffered very little from frost. Cranberry vine worms and cut worms are doing damage. Planting is about half completed. Farm help is rather scarce at present, but most of it is good help. Wages average $1.25 per day, with board, and $2 per day, without board. There is nothing new in the way of acreage of farm crops or new enterprises.

Dennis (Joshua Crowell). — The season is about an average one. Pastures and mowings promise well, but are much in need of moisture. There was a full bloom of most fruits, and no frost damage. Tent caterpillars and cut worms are doing damage. Planting rather late. Farm help is scarce and a small proportion of it good help. Wages average $2 per day, without board. Cranberries were injured by frost, just how much cannot now be determined.

Truro (John B. Dyer). — The season is below the normal, owing to the extreme dry weather. Pastures and mowings are dry and fall seeding wintered fairly well. Pears and apples blossomed well, except Baldwin apples, which were shy. Tent caterpillars and brown-tail moths are doing damage. Planting is progressing slowly on account of dry weather. Farm help is quite scarce, but fairly good when obtainable. Wages average $15 per month, for boys in their late teens, with board, and 20 cents per hour, for men, without board. No particular change is noticeable in the acreage of farm crops.

Eastham (A. L. Nickerson). — The season is below normal, backward and very dry. Pastures are very short and the hay crop will

be smaller than usual. Fruit trees bloomed full, with no damage from frost. Asparagus beetles are doing great damage, and tent caterpillars are numerous. Hardly any planting has been done as yet, owing to drought. Help is very scarce, but most of it is good. Wages average $25 per month, with board, and $2 per day, without board. The acreage of farm crops is about the same as usual.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — The season is later than usual. Pastures and mowings are backward; fall seeding wintered fairly well. The fruit bloom is backward and has not suffered from frosts. Cut worms are doing some damage. Planting is progressing slowly. Farm help is scarce with about one in four good help. Wages range from $15 to $25 per month, with board and from $35 to $40, without board. There are no marked changes in the acreage of the usual farm crops. We had frost the first part of the month, before the fruit bloom was out.

NANTUCKET COUNTY.

Nantucket (H. G. Worth). — The season is about two weeks late. Pastures and mowings are looking well. There is no fruit raised here. Insects are not troublesome as yet. Most farmers are late with their planting. Farm help is scarce and not any first class help to be had. Wages average $25 per month, with board, and $1.75 per day, without board. There are no special changes in the acreage of the usual farm crops. There is as fine a field of alfalfa here as you can find in the State.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

THE GROWING AND MARKETING OF SQUASHES, MELONS AND CUCUMBERS.

By HENRY M. HOWARD, *Dix Farm, West Newton, Mass.*

The cultivation of each of these crops is most easily understood and performed. The preparation of the soil is so easy and the labor of cultivating and harvesting so light that they have been called the lazy man's crops. But in order to get a large yield of high quality, and make a big profit, requires a grower who is able to surmount every difficulty.

In general the preparation of the soil would be the same for each of these crops. Manure is applied broadcast, at the rate of from 8 to 10 cords per acre, and plowed in about 6 inches deep. Additional manure or fertilizer is used in the hill. As soon as the manure is plowed in, harrow and level the surface, and continue to harrow and level at intervals of a week until ready to plant the crop, the latter part of May or the first part of June.

SQUASHES.

The growing of squashes can easily be made more profitable than the raising of corn or potatoes. There is considerable outlay connected with starting in the squash business. It is necessary to have a good storage plant, well built and heated, but this plant requires very little repair, and there is no great shrinkage in value. A good squash house is double-walled, rat proof and plastered on the inside. The shelves are made 6 or 7 feet wide and $2\frac{1}{2}$ feet apart, one above another. A walk 2 feet wide is left all round the wall and between the tiers of shelves. The heating may be by a coal stove or a hot-water heating system, having the heating pipes located on the walls and near the floor. The ventilation should be by windows on the side walls and gable ends.

A crop of squashes will vary from 7 to 10 tons to the acre. Some varieties are much heavier croppers than others. The Bay State has yielded 12 tons per acre. The price per ton varies from year to year. There is usually a good market some time each year at $30 per ton, and often at $40 to $50. One year not long ago a few were sold at $4 and $5 a barrel. Considering the average crops of squashes, and how great a yield of some companion crop may be secured, makes the growing and storing of winter squashes look quite attractive.

The hills for squashes should be 10 by 10 feet or 12 by 12 feet apart, according to the soil and the variety grown. At the greater distance the vines will often more than cover the ground and pile up. Where manuring in the hill alone dig in a bushel of manure to the hill, about 1 foot deep and in a circle 2 feet in diameter. If manured broadcast, as above suggested, a single forkful of manure or a large handful of fertilizer dug into the hill will be enough. Plant five or six seeds in a heel track and cover 1½ inches deep. Bunching the seeds does no harm and the after-care is made easier than if they are scattered.

The young plants should be up in five to seven days, and should be dusted at once with a mixture of plaster, tobacco dust and Paris green, a teaspoonful of Paris green to two quarts of plaster and two quarts of tobacco dust. Often the flea beetle is on the plants and eating before the farmer knows that the plants are up. The flea beetle is easy to subdue, but the striped beetle is more persistent, and must be attended to several times, until his season is past. It is extremely important to dust with poison and plaster as soon as possible after a rain, as the striped beetle eats very much more rapidly when the vines are clean and soft.

A duster may be made from a two-pound baking powder tin by punching holes in the bottom, three-fourths of an inch apart, with an awl or nail. A little experience will show how much poison dust to put in the can at a time, but it should never be filled full. Put the cover on tight. Put as many men or boys at the dusting job as possible, and get the dust on while the plants are moist. These dusters are particularly useful to put tobacco dust on peas, carrots and lettuce when attacked by the green fly.

By planting squashes as late as the 10th to 12th of June, trouble with the black bug can be largely avoided. The bug is not often troublesome, but when he is he may be trapped under shingles placed on each side of the plant and inspected early every morning. Picking off the bugs and their eggs and dropping them into a pail of kerosene is the best known means of dealing with this insect.

For very early summer squash or early marrows the seed is planted under glass in hotbed or greenhouse, and transplanted into 5½ or 8 inch pots, two plants to a pot; they are grown in the pots, with glass protection, for about three weeks, and then hardened off to set in the field. Plant the seed for these early squashes from April 1 to April 15,

and they will be ready to set in the field from May 15 to May 20. The summer squashes are set in the field 3½ by 6 feet, and the marrows 6 by 6 feet or 6 by 9 feet.

The soil for early summer squashes should be manured heavily for spinach or radishes, either one of which will be off in time to set the summer squash. Furrows are made every 6 feet and potted squash plants removed and set every 3½ to 4 feet. The cultivation of summer squashes is very intensive. A plow is used to turn a furrow away from each side of the row and then turn the soil right back to it, not allowing any time for it to dry out. The plow loosens up the soil near the plants, and new roots at once make use of the loose soil. After-cultivation is given about once a week with the cultivator until July 10, at which time the vines should cover the ground. Summer squash well repays for irrigation and intensive cultivation, and will easily return 25 cents per hill. Some seasons there has been a wilt disease on summer squash, and vines apparently vigorous will wilt and dry up in four or five days, no amount of care or attention being of any avail. The disease does not attack the plants until some fruit has been produced. Varieties to plant are Giant Crookneck and Mammoth White Scallop. The cultivation of other kinds of squashes will vary according to the system of planting, but it can all be done with the plow, harrow and cultivator. When planted with a crop of peas or beans some work will have to be done with the hoe. Thinning the hills to three plants should be done when the plants are 4 or 5 inches high, at the same time pulling a little soil up around the plants that are left.

Squashes are easily hurt in harvesting, being cut or bruised in handling. The summer squashes and marrows are usually handled in boxes or crates, and if put up carefully present a very attractive appearance. They are sold by the dozen, hundred or barrel. Winter squashes are usually stored in the fall and sold by the hundredweight or by the barrel during the winter. Carefully harvest the squashes, without cutting or bruising, and place in piles in the field, making one row of piles to every three rows of plants. When all are harvested they may remain in the piles a few days, until they dry out somewhat. They should be carted to the storage house in spring wagons, and mats or blankets used to prevent the squashes being injured in the wagons. As the squashes are put away in the storage house they should be sorted, the larger ones being placed on the lower shelves near the walks. The smallest and most immature ones should be placed on the highest shelf. There is little trouble involved in keeping squashes if they are carefully harvested, handled and stored. The house must have proper heat and ventilation. When first filled the house should be kept open as much as possible, as unless the squashes are able to give off water and dry out they will rot. As the season advances the ventilators may be closed somewhat and heat applied to keep a uniform temperature

of about 50° F. There should always be a dry, clear air in the squash house, secured by proper heat and ventilation.

The marketing should begin with the best and largest squashes. A squash with a hard shell, large size and good color will start the market well. By getting the large ones off first the farmer largely reduces his chance of loss from speck or rot. As the large squashes are removed and sold those remaining should be more thinly spread on the shelves. The writer has seen squashes of the Hubbard variety kept over from one season to another, or from one September to the next following September. These squashes were much lighter in weight and in color than when put into the house, but their quality was good. They were kept in a good house where the grower paid considerable attention to heat and ventilation. Selling squashes by weight is the best way for the farmer early in the season, and by the barrel the best for him late in the season, for they lose much in weight during the winter.

Muskmelons.

Muskmelons are a crop most easily grown, and quite profitable and satisfactory when certain methods are carefully followed. Good standard varieties are Emerald Gem, Early Hackensack and Montreal Nutmeg. The soil for melons should be a sandy loam. The hills should be 4 by 6 feet apart, with several seeds in the hill, planted as soon as possible after May 10. A crop may be secured if planted as late as June 15. The hills are prepared by digging in a large forkful of manure and a large handful of fertilizer. The plants will be up in a week to ten days, and will need protection from the black flea beetle, striped beetle and cut worm. Be even more careful to watch for these pests on melons than on squashes, as melons are more tender and more easily destroyed.

The cultivation of the crop consists of one hand hoeing as soon as the plants are up, then horse cultivation until the vines begin to cover the ground, and finally another careful hand hoeing. After the vines nearly cover the ground they should not be distributed by cultivation, but large weeds may be pulled by hand. The melon vine does not do well if moved after once spread for a crop.

If it does well, the crop should begin to come off by the middle of August and continue for two weeks. Melons should be picked every day, and when maturing very fast twice a day, taking only those which are ripe. Pack the melons in boxes or baskets, making two or three grades, and work up a trade on what you have. Good melons will bring from $1.50 to $2.50 a box of 18 by 24 inches. A good crop will give five or more first-class melons from each hill. Some melons mature very quickly. The Emerald Gem is one of these, and it seldom fails to mature its crop before the time of the August blight. This variety has never been troubled much with the blight, and has always been satisfactory in quality and a good money maker when grown under glass or in the open.

To grow melons under glass on raised benches set the plants one in a place, a foot apart, on the back side of the bench. Remove all the soil from the front part of the bench. Train the vines to a single stem and allow only three melons to set on a vine. Support these three with netting of some kind, cloth or wire, and you will probably get the most perfect fruit you ever saw or tasted.

A crop of melons may be started in a bed, and when the vines begin to cover the ground the sashes removed and the vines allowed their own way. This crop is usually prolific, and will average more than five melons to the hill.

Another way of handling the crop is to start the plants in a hotbed or greenhouse and transplant to pots, setting the plants in the field after the first of June. By this method we have no trouble with bugs or beetles and very much better results in the way of yield. This system is adapted to market gardens, as the land can be used for an early crop of spring radish or lettuce, and then be available for the melons.

As the melons are nearing maturity out of doors it will be found profitable to set them up on shingles, glass or berry baskets to protect them from wire worms and from spotting. The richer and damper the soil the more danger there is of loss from spotting.

Cucumbers.

Cucumbers are a greenhouse crop. They are raised under glass in beds or greenhouses almost exclusively when raised at a profit. Of course many cucumbers are raised out of doors, but the season of fruiting is much shorter and the crop lighter per plant than when grown in a greenhouse. The greenhouse crops may be started at any time of year. The crop most productive of large returns will be one that is beginning to fruit in April or May. This crop will continue in fruit until August if carefully handled and protected from green fly and red spider.

There are two particular ways of training the greenhouse crop, called the string system and the trellis system. The plants for either system are raised the same way. The seed is sown thickly in a bed over a mild heat. As soon as the seed leaves are open the young plants are set over into a seed bed, about 2 inches apart each way. In a few days, three to seven, they should be set over in 5½-inch pots, one plant in each pot. The pots should be plunged level with the ground in a greenhouse, and set over mild heat in March, but need no heat if set in April. If set in a bed or frame they will need some bottom heat. It is best to water with water as hot as the hand can bear when transplanting seedlings to the bed or pots. It is best to let the pots go dry a few days before transplanting to the permanent row. This will toughen the plants, and none will be lost by breakage in handling, as they would if grown soft. Just before removing from the pots soak each thoroughly with the hose, or by dipping in a tub of water.

For the early set cucumbers the rows are prepared either the long or short way of the house, by digging out a trench 18 inches wide and about as deep, and filling in a foot of good, moist, hot horse manure, and covering with 6 inches of loam. When setting, the loam is scooped out every 16 to 30 inches and a plant set right down onto the hot manure. The soil is then drawn around the ball of roots and the rows watered with warm water. For the crop set in April or May no heat under the row is needed. A heavy coat of manure is worked in and the plants set as above described. Then some crop like radishes or beets, for greens, is sown between the rows of cucumbers. Either of these crops can be taken from the land in addition to the cucumbers, and not hurt the cucumber crop, if done carefully, as they are out of the way in four to six weeks. The cucumbers will begin to fruit in four to six weeks from setting the plants. It takes about four weeks to raise the plants from seed.

The string system of training the vines is quite popular at present in the vicinity of Boston. The plants are set 14 to 16 inches apart, in rows 4 feet apart. They are trained to a single stem on three-ply jute string, stretched between two wires, one a small No. 18 wire, attached to the walk boards, and the other a large wire, No. 14, stretched across the house, and attached to screw-eyes in the sash bar. These two wires are about 6 feet apart, and the heavy one, directly above the row of cucumbers, is supported by the heating pipe, or by wires attached to the posts of the house. The jute strings are stretched between these wires. The training of the vine to a single stem is very simple. The vine takes to the string without much attention, and when it reaches the large horizontal wire it is trained one way over five small wires stretched between the large ones. Laterals will come out at every joint on the main stem, and each of these may be allowed to set two pickles, and then pinched back. The amount of fruit that sets on a single plant before the main stem reaches the top wire is enormous. It is claimed for this system that there is a larger set of early cucumbers than by any other system. All the wires once up are up to stay, and the string is cheap and easily removed when cleaning out a house.

The trellis system requires fewer plants, as the rows are set every 8 or 9 feet, and the plants 16 to 30 inches in the row. The plants are trained to three stems and are tied in place on the trellis. The trellis is made by setting 3-inch furring every 9 feet, at a slant of 45°, and stretching on these five No. 18 wires, or a cucumber netting, on which to train the vines. One row of furring is made to support another, and the end pieces are secured to the sash bars or heating pipe. There is much labor in getting the trellis into a house and in setting it up, and about as much more in getting it out again. The advantages of the system are these, — more chance for light on the leaf system, fewer plants to raise, and it is much easier to see the cucumbers when

picking. If the rows of plants, under either system, are run the short way of the house, the heavy pickings of fruit can be more easily gathered on the wagon.

The cucumber requires an even temperature, not too wide a variation between day and night, expecially when loaded with fruit. Watering must be carefully attended to, and enough yet not too much water applied. The vines are sometimes spoiled by too heavy watering. As soon as the ground in a house is cleared of small stuff it is loosened up with forks, and then wet down and mulched with coarse manure. Care must be used not to put in manure which is giving off ammonia, as it will injure the leaves. In every path across the house a board is laid to walk on, so as to keep the soil light and loose. A good crop of cucumbers for a house 40 feet wide would be $350 or more for every hundred feet of length.

In order to get a good set of cucumbers in a greenhouse there should be a strong colony of bees to every 150 feet of length. The beehive should be set outside the house, and near enough to it to have an entrance directly into the house and another entrance into the open. Keep the entrance into the open closed until the bees are working well in the house, and then give them the use of the entrance into the open. With two entrances the colony will be kept in a more normal condition.

Cucumbers in a greenhouse are liable to attacks from green flies and red spiders. Control the green fly by using tobacco or nicofume for smoking the house. Dispose of the red spider by the use of a spray of soap or water, or both. It is best to consult with and learn from some one who is keeping the red spider down by the use of these sprays.

Cucumbers should be harvested by cutting from the vines with a knife when they are of a diameter barely encompassed with the thumb and middle finger. Seven or eight dozen cucumbers should be enough to fill a bushel box. Cucumbers should be harvested regularly about four times a week, and if carefully done very few will become too large. The fruits should be sorted into three grades and a trade worked up for each grade.

Large numbers of hotbed sash are used for raising cucumbers, and a good crop will return $1 or more gross per sash. Manure is trenched in as above described for early greenhouse cucumbers, to supply the needed heat. The manure is put in the first week in May, and plants set one or two plants to a sash. These beds should be about 4 feet apart. The sash will be enough protection for the cucumbers, no mats being needed. The vines will soon cover the ground, and by the first of July will be bearing heavily. As soon as the vines begin to climb out of the sides of the bed the sash may be taken away and piled up. Bed cucumbers and those planted in the open are less liable to be troubled with green flies and red spiders than those in greenhouses. If any plant or hill is infested it may be well to throw a canvas over it and

smoke it, or to pull up the vine and carefully remove it, so that these insects will not infest the other plants.

Cucumbers may be planted in the open from May 1 to July 1, with a fair show of getting a crop. The land should be very rich. The hills, 4 by 6 feet or 6 by 6 feet, may be prepared as for melons. The young plants need just as much care and attention as young melons. A mulch of coarse manure over the ground before the plants cover the ground will be found very beneficial. If weather conditions are favorable, a large crop may be obtained, but the season for picking will be short. It is very hard to harvest outdoor or bed cucumbers satisfactorily, as so many are missed and grow too large. The variety most commonly planted, inside or out, is the Arlington White Spine.

SERIES OF 1911. VOL. 24 NO. 2.

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MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF JUNE, 1911.

GROWING CABBAGE AND CAULIFLOWER.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary.*

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

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The State Board of Publication.

Crop Report for the Month of June, 1911.

Office of State Board of Agriculture,
Boston, Mass., July 1, 1911.

The crop report for June, the second of the season, is herewith presented. Prospects for many crops can now be fairly well forecasted, for the first time this season, making the present report of special interest. At the close of the bulletin will be found an article on "Growing cabbage and cauliflower." This article has been adapted from Farmers' Bulletin No. 433 of the United States Department of Agriculture, on "Cabbage," by L. C. Corbett, horticulturist, Bureau of Plant Industry. Such portions of the above bulletin as applied to Massachusetts conditions have been taken, with a few minor changes, thought necessary by experience, and a short statement in regard to cauliflower added. Mr. Howard N. Legate, first clerk, has prepared the adaptation, with suggestions from Secretary Ellsworth, inspired by his many years of experience in market gardening. The result is an exceedingly readable and valuable bulletin on two crops of prime importance in the market garden and home garden and on the farm.

Progress of the Season.

The Crop Reporting Board of the Bureau of Statistics of the United States Department of Agriculture estimates the area sown to spring wheat to be about 20,757,000 acres, an increase of 4.9 per cent over last year; its condition as 94.6, as compared with 92.8 in 1910, and a ten-year average of 93.6. The area of winter wheat is estimated to be about 31,367,000 acres, an increase of 6.6 per cent over last year, and its condition as 80.4, as compared with 80 in 1910, and a ten-year average of 81.6. The yield of all wheat per acre is indicated by condition to be 14.7 bushels, as compared with 14.1 in 1910, and a five-year average of 14.7; while the total production promises to be 22.9 per cent in excess

of that of 1910, and 16.9 per cent in excess of the average production of the past five years.

The total acreage of oats is given as 35,250,000 acres, a reduction of one-tenth of 1 per cent from last year; its condition as 85.7, as compared with 91 in 1910, and a ten-year average of 88.4; its yield per acre as 27.7 bushels, compared with 31.9 in 1910, and a five-year average of 28.4; and the total production as 86.7 per cent, compared with 1910, and 104.8 per cent, compared with the average of the past five years.

The total acreage of barley is given as 7,038,000 acres, a reduction of 3 per cent from last year; its condition as 90.2, as compared with 89.6 in 1910, and a ten-year average of 90.9; its yield per acre as 24.9 bushels, compared with 22.4 in 1910, and a five-year average of 24.8; and the total production as 108 per cent, compared with 1910, and 105.3 per cent, compared with the average of the past five years.

The condition of rye is given as 88.6, as compared with 90.6 in 1910, and a ten-year average of 90.2; its yield per acre as 16.1 bushels, compared with 16.3 in 1910, and a five-year average of 15.4.

The condition of hay is given as 76.8, as compared with 84.7 on May 1, and 86.1 on June 1, 1910.

The condition of pastures is given as 81.1, as compared with 81.3 on May 1, 88.5 on June 1, 1910, and 90.7, the June 1st average of the past ten years.

In Massachusetts the acreage of oats as compared with last year was 98 and the condition 89; the condition of barley was 88; of hay, 76; of clover, 76; of pasture, 78; of apples, 82; of peaches, 72; of pears, 80; of blackberries, 88; of raspberries, 83; of cantaloupes, 79; of watermelons, 87; of Lima beans, 82; of cabbages, 70; and of onions, 81; while the production of asparagus, compared with a full crop, was 85.

The average condition of all crops for the New England States, by States was approximately as follows, 100 indicating the average (not normal) for recent years on June 1: Maine, 93.7; New Hampshire, 84.2; Vermont, 89; Massachusetts, 82.3; Rhode Island, 86.2; Connecticut, 79; average for district, 85.7.

Temperature and Rainfall for the Whole Country.

[From National Weekly Weather Bulletin.]

Week ending June 5. — Cool weather prevailed over the central valleys during the first part of the week. By the middle of the week warm weather developed in the northwest, and during the last three days unusually high day temperatures prevailed in the Missouri, Mississippi and Ohio valleys and Gulf States. Over more eastern districts, especially along the immediate Atlantic coast, the weather continued moderately cool during most of the week. In the Rocky Mountain and Plateau region the weather was moderately warm during the latter part of the week, but over the Pacific coast States cool weather continued. The total rainfall for the week was generous in amounts, and fairly well distributed from the northern Rocky Mountains and Missouri valley eastward to the Atlantic, except along the immediate coast, the amounts ranging generally from ½ to 2 inches, with small areas of from 2 to 3 inches or slightly more. Elsewhere the rainfall for the week was light.

Week ending June 12. — For the week as a whole the temperature averaged above the normal over all portions of the country, save over narrow areas along the north Atlantic and north Pacific coasts, where it was normal or slightly below. Over the interior valleys the week was unusually warm, the average daily excess ranging from 6° to 12°, making the fourth consecutive week with temperatures decidedly above the normal. Maximum temperatures were above 90° over all interior sections, and above 100° over large areas. The rainfall during the week occurred, as a rule, in connection with local thundershowers. The precipitation was deficient over large areas, and over much of the territory from the lower Mississippi valley westward to the Pacific there was an entire absence of rain. Good rains occurred over the upper Ohio valley, and thence eastward to the coast and northeastward to central New England.

Week ending June 19. — For the week as a whole the mean temperature continued above the normal in the Mississippi valley and Great Plains region, where it has been

almost continuously, and frequently decidedly, above normal since early in May. The warm area extended eastward over the Gulf and South Atlantic States, and westward over portions of the Rocky Mountain and Plateau regions. From the Ohio valley and lower Lake region eastward and northeastward to the Atlantic coast and New England the temperature average was several degrees below the normal. For the week as a whole the precipitation was fairly well distributed, and rather generous in amount from the Lake region and Ohio valley westward to the Middle Atlantic States and New England, and there were good local showers in portions of the South Atlantic and east Gulf States and over most of the Florida peninsula. Moderate, and in a few instances heavy, rains occurred in portions of the Rocky Mountain region, in extreme western Texas, and locally at other points.

Week ending June 26. — The weekly mean temperatures were again above the normal throughout the greater part of the country east of the Rocky Mountains, and especially high over the Great Plains, upper Mississippi valley and upper Lake region, where they have been almost continuously above the normal for the past seven weeks. From the Rocky Mountains westward the temperatures were everywhere below the normal. From New Jersey and eastern Pennsylvania northward over New York and the greater part of New England the temperature average was below the normal. The total rainfall for the week ranged from 1 to 4 inches in the central and northern portions of Illinois, Indiana and Ohio, and similar or heavier falls occurred in the lower Mississippi valley and over much of the east Gulf and South Atlantic States. There were some good showers from the northern Rocky Mountain region eastward to the upper Lakes, and in portions of the lower Ohio valley and Middle Atlantic States. In southern New England there was practically no rain.

Special Telegraphic Reports.

[Weather Bureau, Boston.]

Week ending June 5. — New England. Boston: Moderate showers occurred, except in Rhode Island and the eastern parts of Massachusetts and Maine, where only small amounts were received. Temperatures were moderate and sunshine was abundant.

Week ending June 12. — New England. Boston: The weather was clear at the middle of the week, but cloudy at the beginning and end, with generally copious showers, except in eastern Maine, where little rain occurred. Temperatures were moderate.

Week ending June 19. — New England. Boston: Cloudy, showery weather prevailed the greater portion of the week. Temperatures were moderate, and the rainfall was generally above normal and very beneficial.

Week ending June 26. — New England. Boston: Moderate showers occurred in northern portions of Maine, New Hampshire and Vermont; elsewhere rainfall was light. Severe local hail and thunderstorms occurred in parts of eastern Massachusetts Tuesday. Temperatures were moderate.

Weather of June, 1911.

The weather of the month was generally unsettled, with precipitation somewhat above the average, temperature practically normal, and quite a marked deficiency in the sunshine. Rain fell on an average of 14 days, and the monthly rainfall over the State generally speaking ranged from near normal to an inch or more above. Excepting general rains on the 6th, 7th and the 13th the precipitation resulted from well-distributed local showers. During the rain of the 13th thunderstorms occurred in nearly all sections of the State, and in some localities they were unusually severe, several deaths resulting from lightning, and considerable damage to property from the same source and from high winds. On the 4th hail storms occurred in numerous sections of the eastern portion of the State, greatly injuring strawberries, cranberries, corn and garden truck. The temperature was unusually even throughout the month, there being no very

warm or cold days, and the monthly mean generally was within a degree of the June average. With slight exceptions, the maximum temperatures ranged below 90°, and the several warm days were well distributed through the month. The copious rains of the month effectually broke the drought that prevailed through the preceding month, and they were of immense benefit to all agricultural interests. At the close of June, rain was, however, needed in nearly all sections. The month as a whole was fairly seasonable and pleasant.

Massachusetts Agricultural Statistics.

The first preliminary comparative summary relative to the agricultural statistics of the State of Massachusetts, collected at the thirteenth decennial United States census, April 15, 1910, by Census Director Durand of the Census Bureau, is presented below. It is pointed out that the principal rates of increase in 1910, as against 1900, are: in the total expenditures for labor, 57 per cent; in the total expenditures for fertilizers, 46 per cent; in the average value per acre of farm land and buildings, 33 per cent; in the average value per acre of farm land alone, 32 per cent; and in the total value of all farm implements and machinery, 30 per cent. The principal decreases during the decade occurred in the total improved farm acreage, 10 per cent; and in the total farm acreage, 9 per cent. Attention is also called to the marked increase in number of small farms, 19 acres and under.

Summary for the State.

All Farms by Acreage, Value of Land, Buildings, Implements, etc.

	1910.	1900.	Per Cent of Increase, 1900-1910.
All farms,	36,512	37,715	[1]3
Total acreage,	2,870,000	3,147,000	[1]9
Improved acreage,	1,162,000	1,292,000	[1]10
Average acres per farm,	79	83	[1]5
Value of land and buildings,	$191,298,000	$158,019,000	21
Value of land,	104,273,000	86,925,000	20
Value of buildings,	87,025,000	71,094,000	22
Value of implements and machinery,	11,512,000	8,829,000	30
Average value per acre of land and buildings,	66.65	50.21	33
Average value per acre of land alone,	36.33	27.62	32
Expenditures for: —			
Labor,	11,747,000	7,487,000	57
Fertilizers,	1,931,000	1,321,000	46

[1] Decrease.

All Farms by Color of Farmer, Tenure, Acreage Groups, etc.

	1910.	1900.	Amount of Increase, 1900-1910.
All farms, by color of farmer,	36,512	37,715	[1]1,203
White farmers,	36,388	37,605	[1]1,217
Negro and other non-white farmers,	124	110	14
All farms by tenure,	36,512	37,715	[1]1,203
All owners,	31,758	32,581	[1]823
Owners, free,	18,785	–	–
Owners, mortgaged,	12,973	–	–
All tenants,	2,935	3,603	[1]668
Managers,	1,819	1,531	288
Distribution by acreage groups,	36,512	37,715	[1]1,203
19 acres and under,	10,264	8,889	1,375
20 to 49 acres,	8,856	8,875	[1]19
50 to 99 acres,	7,965	8,910	[1]945
100 to 174 acres,	5,694	6,660	[1]966
175 to 499 acres,	3,322	3,967	[1]645
500 to 999 acres,	318	339	[1]21
1,000 acres and over,	93	75	18

Publications.

Nothing has been issued since the publication of the Crop Report for May, copies of which are still available. It contained a special article on "The growing and marketing of squashes, melons and cucumbers."

Summer Field Meeting of the Board of Agriculture.

The State Board of Agriculture will hold a summer field meeting at Concord, Mass., on July 25, 1911. The hour of the various exercises has not been determined, but a visit will be made to the asparagus experiment plots, conducted under the direction of the Massachusetts Agricultural Experiment Station, where the experiments will be carefully explained by those in charge and the general culture of the crop discussed. Dr. H. J. Wheeler, director of the Rhode Island Agricultural Experiment Station, will deliver a lecture on alfalfa growing, based on experiments and investigations which he has carried on for a number of years. The public is cordially invited to attend this meeting, and those under whose notice this paragraph falls are requested to speak of it to neighbors and friends. Those desiring more particular information as to hour of exercises, trains, trol-

[1] Decrease.

leys, etc., should write to us for the information, which will be forwarded them when arrangements are definitely settled.

In the circular to correspondents, returnable June 24, the following questions were asked: —

1. What insects are proving injurious in your locality?
2. How is Indian corn looking, and what is the acreage compared with previous years?
3. Has haying begun, and what is the prospect for the crop?
4. How does the acreage of early potatoes compare with previous years, and what is the promise for the crop?
5. How do early market-garden crops compare in yield and price with former years, and what is the prospect for those not yet harvested?
6. How do the quantity and price of dairy products and the supply and price of dairy cows compare with former years?
7. What is the condition of pasturage in your locality?
8. What is the outlook for such fruits and berries as are grown for market, naming them?

Returns were received from 136 correspondents, and from these the following summary has been compiled: —

Insects.

Insects are perhaps a little more troublesome this year than usual. As stated in the May report, cut worms have been unusually numerous, and 71 correspondents report them this month as doing damage. Such a number of reports of damage from these insects is entirely unprecedented. However, their ravages are now practically over for the season. Gypsy and brown-tail moths are reported by a larger number of correspondents than ever before, 16 and 22, respectively. Potato bugs do not appear to be doing any unusual amount of damage. Other insects are no more numerous than usual. Those reported were tent caterpillars, currant worms, elm-leaf beetles, wire worms, rose bugs, squash bugs, striped cucumber beetles, onion maggots, cab-

bage maggots, cabbage worms, spittle insects, codling moths, flea beetles, cranberry vine worms, white grubs and the curculio.

Indian Corn.

The acreage of field corn will not be increased over other years to the degree indicated by the returns for May, owing to failure to germinate in some cases, but there will nevertheless be a greater acreage than for several years. There are practically no reports of decreased acreage, and but few where the acreage is given as the same as last year. The crop is not in the best of condition, starting late because of delayed germination, from dry weather, and being held back by the cool weather that has prevailed throughout June. The stand is rather uneven, owing to failure to germinate and damage from wire worms and from crows. The condition is not such, however, but that it will be readily remedied by a few weeks of warm weather, and with seasonable weather through July the prospect should be excellent for the crop.

The Hay Crop.

Haying had hardly begun in any section at the time of making returns, and promised to be later than for some years. The crop improved rapidly since the rains, and the disposition seemed to be to delay cutting as long as possible, to secure as much increase in weight as might come. On new-seeded, well-manured fields the crop promised to be a good one, though not as large as some years under such conditions, but elsewhere it will be light. For all fields the promise is for no more than a three-fourths crop and it may very well fall below this percentage. There are several reports that farmers are planning to put in an unusual amount of forage crops in the hope of partially offsetting the shortage in the hay crop. Clover germinated poorly and winterkilled badly, according to a number of correspondents, and the amount of this valuable constituent of the hay crop seems certain to be much less than usual.

Potatoes.

The reports are general that the acreage of early potatoes is decidedly decreased from former years, as indeed is that of all potatoes. This is due in a large measure to poor prices for the past few years, and the difficulty of raising the crop without special machinery and equipment. The crop was somewhat backward at time of making returns, as was all vegetation, but otherwise seemed to promise well. With careful spraying good results can be obtained from potatoes in Massachusetts as well as in Maine, and this crop is one that deserves more careful and intelligent culture from our farmers.

Early Market-garden Crops.

Early market-garden crops suffered from drought, cold weather and the ravages of cut worms, being planted over in numerous instances, and were generally light in yield. They were correspondingly high in price, and the growers in general seem to be well satisfied with the results. Crops coming on within a short time are also backward, and bid fair to be light. What the result will be with late market-garden crops is as yet uncertain, but there is some complaint that celery, cabbage and cauliflower plants are poor and difficult to procure.

Dairy Products and Dairy Cows.

The supply of dairy products seems to be fully up to the demand, with a good flow of milk. Prices for milk for the metropolitan district market are considerably lower than last year, as are also those paid for butter fat at the creameries, and for butter where it is made by the dairymen. Prices for milk for local consumption, outside of the metropolitan district, are, according to the reports of correspondents, well up to last year. This would indicate that the way out for the Massachusetts dairyman was to seek a market other than that afforded by Boston and its suburbs. A curious result is seen in the answers to the portion of the

question relating to dairy cows. In the western and central portions of the State, where the farmers have cows for sale, a great many correspondents report that they are lower than for some years, and almost none that they are higher; while in eastern sections, where there are practically no cows for sale, the correspondents are almost unanimous in the report that they are higher than ever before. The dealers would seem to have taken advantage of low prices in the outlying regions to keep the price down to the sellers, and of the continued high prices in regions where the local market is catered to in the main to keep the price up to buyers.

Pasturage.

Pasturage suffered from drought in May, but responded readily to the recent rains, and was quite generally in good condition at the time of making returns. However, rains should follow within a short time if this condition is to continue, as the feed will feel the effects of any future drought much more readily than would be the case if the month of May had been normally moist. Farmers should be prepared to feed at the barn at any time during the remainder of the season.

Fruits and Berries.

The reports on fruits and berries were so varied as to make it difficult to form an opinion for most crops for the State as a whole. Strawberries are certainly a light crop, having winterkilled to some extent, suffered from drought, and later the berries having been spoiled, in some instances, by the rains. Prices have generally been good. Currants will probably be rather light, owing to the drought. Raspberries and blackberries promise well, as a whole, but are in need of seasonable rains. Wild berries generally bloomed full and promise well. Apples indicate a fair crop. A larger crop of peaches is indicated than for some years. Other tree fruits cannot be determined at present, and later developments may indicate that the present judgment in regard to

apples is incorrect. Cherries are little grown for market, but were generally an excellent crop. Spraying is receiving more attention every year, old orchards are being renovated and new ones set out, so that in time Massachusetts may realize, to a certain extent, her possibilities in horticulture, and supply her own market to a much greater extent than at present.

NOTES OF CORRESPONDENTS.

(Returned to us June 24.)

BERKSHIRE COUNTY.

New Marlborough (E. W. Rhoades). — There has been much damage by cut worms to corn and other crops. Rather more corn was planted than usual and it has started fairly well and is of good color. Most farmers say hay will be a light crop, with very little clover. Early potatoes are a little late, but otherwise promise well. Home grown strawberries command extra good prices this season. Dairy cows, when fresh, bring very high prices. Feed in pastures continues sweet and good. There is a fair crop of apples in sight; small fruits more or less winterkilled.

Tyringham (Edward H. Slater). — Potato bugs are doing considerable damage. Indian corn is looking well, with a larger acreage than in previous years. Haying has not begun and a light crop will be harvested. The acreage of early potatoes compares favorably with former years and promises a fair crop. Very few market-garden crops are raised in this locality. There has been a good supply of dairy products, with prices about the same as in former years. Pasturage is looking well. The outlook for fruit is good.

Becket (Wm. H. Snow). — Tent caterpillars and potato bugs are doing damage. Corn is late and small. Haying has begun and the crop will not be an average one, on account of dry weather in May. The acreage of early potatoes is probably slightly reduced. Market-garden crops look well, but are not as forward as usual. The price of dairy products is lower than formerly; supply of cows less and prices fully as high as usual. Pasturage is in very good condition. Strawberries, raspberries, blackberries and blueberries promise well.

Lenox (Horatio H. Sears). — Tent caterpillars and cut worms are somewhat more active than usual, potato bugs are about the same and there are a large number of flea beetles. Indian corn is looking well, considering the late season, and the acreage is slightly increased. Haying has not begun and the prospect is for a small crop. The acreage of early potatoes is normal and the prospect favorable. Early market-garden crops are normal in yield and price, with prospect good for later ones. The quantity of dairy products is sufficient for the demand; supply of cows normal and prices good. Pastures are now in fair condition. Strawberries are a large crop, other berries fair; peaches promise a large crop; apples and pears fair to good.

Richmond (Timothy B. Salmon). — Currant worms, potato bugs and elm leaf beetles are doing damage. Indian corn is average in acreage and condition. Haying has not begun and there will be about 90 per cent of an average crop. Early potatoes show an increased acreage and are in good condition. Early market-garden crops are little raised. Dairy products above average in quantity, and below last year in price; few cows in the market and prices higher than formerly. Pasturage is in good condition. Strawberries are a good crop; no cherries; few raspberries; blackberries good; plums good.

Hinsdale (A. N. Warren). — Corn is small and late, owing to cool weather; acreage about 90 per cent of the normal. Haying has not yet begun and the crop promises about 75 per cent of the normal. There is about the full acreage of early potatoes and they are looking well. Early market-garden crops are light in yield, with prices high and the prospect fair for later ones. Quality and quantity of dairy products good and prices higher than usual. Pastures are in good condition. Strawberries are late, but promise a fair crop.

Cheshire (L. J. Northup). — Potato bugs are more numerous than ever. Indian corn is rather backward, acreage about as in former years. Haying has not begun and the crop does not promise very well. Potatoes are looking fairly well. Early market-garden crops are about the same as usual in yield and price. Dairy products keep up and prices of cows are much higher than in former years. Pastures are looking very well indeed. Strawberries were badly damaged by a severe hail storm.

Savoy (Willis W. Burnett). — Potato bugs are becoming quite plenty. Indian corn is rather backward, with about the usual acreage. Haying has not begun and the prospect is for an average yield. Acreage of early potatoes about the same as usual, with fair promise for the crop. Very little is done with market-garden crops. Prices for dairy products and dairy cows are much less than in former years. Pasturage is in fine condition. June has been cold and all crops are backward and growing slowly.

Williamstown (S. A. Hickox). — Potato bugs and currant worms are doing some damage. The acreage of Indian corn is normal and the crop promises to be about 70 per cent of the normal. Haying has not begun and the prospect is that the crop will be light. The acreage of early potatoes is normal, also their condition. Early market-garden crops are average in yield and bring good prices. Dairy products are lower in price than last year. Pasturage is in good condition. The prospect is poor for plums and cherries.

FRANKLIN COUNTY.

Rowe (Henry D. Wright). — Tent caterpillars are doing some damage. Indian corn is backward, with about the usual acreage. No haying has been done, but there is prospect of an average crop.

Acreage of early potatoes less than last year, but they are now looking well. Quantity of dairy products the same as usual, prices much lower; cows scarce and prices rule lower. Pastures are in good condition. Fruits and berries are not raised for market.

Leyden (Frank R. Foster). — Cut worms have done considerable damage. Crows have been more troublesome than for some years previous. Indian corn is looking well and the acreage is larger than usual. Haying has not begun to any extent and there will not be an average yield. Not as many early potatoes as usual were planted and some fields are uneven. Dairy products in good supply, but low in price; dairy cows plenty and from $10 to $20 lower in price than last year. Apples and pears are fair crops; raspberries average; strawberries short.

Conway (L. T. Hopkins). — Cut worms and potato bugs are unusually plenty. Corn is small owing to dry weather, with a full average acreage. A few have commenced haying and the crop will be light. Potatoes look well, but are not raised for market. With milk bringing two cents a quart farmers are not very enthusiastic over dairying. Pastures are much in need of rain. Apples will give half a crop, with favorable weather.

Gill (F. F. Stoughton). — There is not much trouble from insects as yet. Corn is late and does not grow very rapidly, with about the usual acreage. Haying has hardly begun and the prospect for the crop is not good. The supply of dairy products is not as large as a year ago and price for butter fat is much less than last year. Pasturage is in good condition.

Whately (C. L. Crafts). — Wire worms and cut worms are doing some damage. Indian corn is looking well and the acreage is about the same as usual. Haying has not yet begun and the crop will be very light, one-third of a normal crop. Not many early potatoes are raised here and those grown have suffered from dry weather. Yield of early market-garden crops not as heavy as usual, prices perhaps a little better. The prices received for milk do not pay for the work of caring for the cows, and cows are much lower in price than formerly. Pasturage is in fair condition. Raspberries, both red and black, look well; strawberries are a light crop.

Sunderland (Geo. P. Smith). — Cut worms have done considerable damage in tobacco. Corn looks well, with about the usual acreage. Early potatoes are little grown, but are about normal in acreage and condition. Early market-garden crops are late but bring good prices. Production of dairy products about the same as usual, prices lower; good cows bring high prices. Pastures are in fair condition, but need rain. Fruits and berries are only grown in a small way. Onions are not up to the normal on the whole. Tobacco plants have been scarce and transplanting is not yet completed.

Montague (A. M. Lyman). — Squash bugs, cut worms and rose bugs

are doing damage. Indian corn looks well and the acreage was much increased. Haying has begun and the prospect is that the crop will not be an average one. The acreage of early potatoes is somewhat decreased, but they are looking extra well. Early market-garden crops are a little late, but look very well, and bring good prices. Dairy products are above average in quantity and dairy cows are rather scarce and a little higher than usual in price. Pastures are in fair condition, owing to recent rains. Strawberries are a poor crop; cherries fair; plums started well, but the curculio is injuring them. Clover did not germinate well and winterkilled badly, so that we have little in our fields this year.

Wendell (N. D. Plumb). — Cut worms and potato bugs are doing some damage. Corn is somewhat backward, but a greatly increased acreage has been planted. The hay crop will be slightly below the normal. Early potatoes are little grown, but are ten days later than usual. Dairy products are lower than usual, but milch cows are very high. Pasturage is better than formerly, but rain is needed. Blueberries will be a short crop; strawberries and cherries below normal, should say about three-fourths crops.

New Salem (Daniel Ballard). — Cut worms, tent caterpillars and elm leaf beetles are doing damage. Indian corn is rather backward, but looking well, with the usual acreage. Very little hay has been cut as yet and a light yield is expected. Early potatoes are looking well, but are not much raised for market. Not much has been done in early market-garden crops. Dairy products are about normal in quantity and price. Pastures are in fair condition, but more rain is needed to keep them up. There will be a fair yield of strawberries.

HAMPSHIRE COUNTY.

Ware (J. H. Fletcher). — Cut worms have been very numerous. Corn is looking well, with a greater acreage than last year. Haying has not begun up to this time and the crop does not promise very well There is about the usual acreage of early potatoes, but they need rain very much. The season has been so dry and cut worms have worked so much that early garden crops have suffered. Prices for cows are high. We need rain to bring the pastures up to the normal. The outlook for fruits and berries is very good.

Belchertown (Almon L. Pratt). — Cut worms are doing some damage. Indian corn is in good condition, with a normal acreage. Haying has not yet begun. The acreage of early potatoes is normal, with only a light crop promised. The price of early market-garden crops is the same as in other years, but they have suffered from drought. Milk is lower than usual in price and cows are high. Pasturage is short. Strawberries are a fair crop.

Amherst (Wm. P. Brooks). — Cut worms have been injurious to an unprecedented extent, and we are also troubled by onion maggots and

currant worms, while the curculio is very serious on apples. Indian corn is much thinned on many fields by cut worms, but the weather is too cool for best growth; acreage about as usual. The acreage of early potatoes is somewhat decreased, but they promise well. Early asparagus made a small yield and brought about half the price of last year; other market-garden crops about normal. Quantity of dairy products a little above the last few years, price of butter lower; cows scarce and high. Pastures are in good condition except on exceptionally light soils. Apples promise a fair crop; peaches a large crop; pears normal; strawberries a very poor crop; currants below normal; grapes promise well; quinces good; blackberries and raspberries promise well. Labor has been very insufficient in supply and many acres of onions have been plowed up as it was impossible to weed them the first time. Recent Polish immigrants have been getting $1.75 and $2 per day.

South Hadley (W. F. Person). — Corn is late, with acreage same as in previous years. No haying has been done as yet, and there will be but a small crop. The acreage of early potatoes is about the same as usual and the crop is not looking very well. Dairy products are about the same as last year, with milch cows very high. Pastures are looking fairly well considering the amount of rain this spring. Strawberries are a light crop. All crops will be late this year, owing to lack of rain.

Southampton (C. B. Lyman). — The cut worms are very voracious, other insects not very troublesome at present. The acreage of Indian corn is increased, but it is very backward. Haying has not begun and the crop is light and two weeks late. The acreage of early potatoes is about normal, but the crop is not very promising. Not much is done here in early market-garden crops. Dairy products are fully up to the average in quantity and price; dairy cows are scarce and high. Pastures are in fair condition. Blackberries promise well.

Westhampton (Levi Burt). — Potato bugs and cut worms are doing damage. Early planted corn is looking finely, but the average is backward; acreage about the same as in former years. Haying has not begun, but the crop will be a normal one. Early potatoes and early market-garden crops are not raised for market. Dairy products are an average supply, but butter fat brings 7 cents less per pound at the creamery than last year. The heavy rains of the first of June have helped pastures. Fruits and berries are not raised for market.

Williamsburg (F. C. Richards). — Tent caterpillars are very plentiful this spring. Indian corn is in poor condition and rather late, owing to dry weather; acreage somewhat larger than last year. Haying has not begun and there will be about a two-thirds crop. Early planted potatoes are in blossom and promise well for a full crop; acreage about one-third larger than last year. Price of dairy products slightly lower than last year; cows scarce and prices firm. Pastures were slow in starting, but are in fair condition at present.

Apples are 95 per cent; pears, 50 to 80, depending on variety; peaches, 35; strawberries, 65. Peach trees and grape vines winterkilled badly. Cherries are a larger crop than for several years, but are little grown for market.

Goshen (Geo. L. Barrus). — Potato bugs are our most troublesome insect. Corn has grown rather slowly, owing to cool weather of late; acreage about as usual. Haying has not begun, but an average crop is in prospect. There is about the usual acreage of early potatoes and they are looking well now. Dairy products are cheaper than for some years and cows are rather scarce and not as high as last year. Pastures are in fair condition since the recent rains. Apples look like an average crop; very little other fruit grown.

Plainfield (C. A. Williams). — Tent caterpillars and potato bugs are doing considerable damage. Corn is looking well and more is planted than in an average year. No one has commenced haying as yet, but the prospect for the crop is very good. The acreage of early potatoes is below the average of previous years, but they are not ready to dig. Early market-garden crops are not raised to any extent and are not yet ready for market. The quantity of dairy products is fully up to the average, and prices are a little below last year. Pasturage is in good condition considering the early dry weather. Strawberries, raspberries, pears, plums and peaches are looking pretty well. There is not so much call for cows as last year and they bring from $5 to $10 less.

HAMPDEN COUNTY.

Blandford (Enos W. Boise). — Potato bugs are doing some damage. Indian corn is only in average condition, much having to be planted over; acreage larger than usual. Very little haying has been done and the crop will be 25 per cent short. There is about an average acreage of early potatoes. Dairy products are in full supply, but prices are much below; cows are very high in price. Pasturage is only in average condition. Few fruits and berries are grown for market and wild berries will be almost a failure.

Russell (E. D. Parks). — Potato bugs are doing damage. Corn is looking finely and there is a full acreage. A few have begun haying, but a light crop is expected. There is about the usual acreage of early potatoes, but the plants are very uneven and a large crop is not expected. Dairy products are fully up to the average in yield and price and good cows are high. Fruits and berries are looking fairly well.

Agawam (J. G. Burt). — The potato bug is our most injurious insect. Corn is looking well and more is raised than in previous years. Haying has not begun and there will be about a two-thirds crop. The acreage of early potatoes is normal and they promise well. Yield and price of early market-garden crops about as usual and the prospect is good for those not yet harvested. The price of dairy products is

about the same as usual and dairy cows are high. Pastures are in good condition. Strawberries will be a light crop; outlook for raspberries and blackberries good; apples and pears good.

West Springfield (N. T. Smith). — Cut worms have been unusually plenty but are now nearly through work. Corn is backward as a rule, with a less acreage than last year. The acreage of early potatoes is below the average, with the prospect for the crop less promising than usual at this season. Early market-garden crops are about average, with good prospect for later ones. There is a demand for all milk produced, at former prices, and good cows are high and scarce. Pasturage is below average and in need of rain. Raspberries and blackberries are doing well, with the promise of full crops; strawberries nearly a failure, apparently owing to imperfect pollination; apples coming on well; cherries fine; grapes set well; peaches promising; good outlook for pears.

Chicopee (E. L. Shaw). — Elm leaf beetles and rose bugs are doing damage. There is about the usual acreage of Indian corn, which is a little backward. The hay crop has been improving since the rains, but where not manured the crop will be light. No haying has been done as yet. There are few potatoes grown, but the crop looks fairly well. Early market-garden crops were a little late, but are growing well now; not many sold as yet. There seems to have been little surplus of milk here, with prices about as usual; good cows are high. Pasturage is improving. Strawberries, blackberries, raspberries and apples promise good yields.

Hampden (John N. Isham). — Spittle insects are working on grass and potato bugs are just appearing. Indian corn is looking well, except that there are many missing hills; acreage increased about one-tenth over previous years. Haying will commence the last week in June, with a light crop on dry land. There is the usual acreage of early potatoes and they promise a good crop. Most market-garden crops compare well with former years in yield and price. The quantity and price of dairy products is holding up well, cows in good demand and prices high. Pasturage is fairly good, but needs rain. Apples and peaches are very promising; pears and plums fair; grapes and berries a little under average.

Wilbraham (Henry M. Bliss). — Not many insects are doing damage. Corn is looking fairly well, considering the drought, and the acreage is fully as large as usual. Haying has not begun and there will not be more than half a crop. The acreage of early potatoes is about 90 per cent of the normal and the crop is backward, owing to drought. Early market-garden crops are about 85 per cent of the normal. Dairy products have fallen off slightly, both in yield and price; cows bring from $45 to $70. Pastures are in poor condition, owing to drought. The outlook for fruits and berries is not very good.

Monson (F. D. Rogers). — Cut worms have been worse than usual.

Indian corn is late, but is looking well; more has been planted than usual. A few have begun cutting hay and the crop is rather light. Dairy products are a little lower than formerly; good cows not plenty and sell for prices rather below recent years. Pasturage is in fairly good condition. Strawberries are a short crop; bush fruits promise well; apples, pears and peaches dropped badly.

Palmer (O. P. Allen). — Elm leaf beetles are doing damage and small colonies of the gypsy moth are said to have been found. Indian corn is very backward, with the usual acreage. There will be a very light crop of hay on uplands. The acreage of early potatoes is about the same as usual, but the crop is so late that the result is still uncertain. Early market-garden crops have not come into market to any extent, but promise well. There is the normal quantity of dairy products at normal price. Owing to the hot, dry weather pasturage is very light. Fruits and berries promise average yields.

WORCESTER COUNTY.

Southbridge (E. T. Torrey). — Cut worms and elm leaf beetles are doing some damage. There is rather more corn planted this year than previously and it looks well. Haying has not begun and the crop will be light, not much better than half a crop. Fewer potatoes than usual were planted, but they are looking well. Owing to drought and cold weather garden crops will be lighter and later than usual. Quantity and price of milk about the same as last years; cows scarce and higher in price. Pastures are somewhat dried up. Unless we have rain soon strawberries, raspberries and blackberries will not amount to much.

West Brookfield (Myron A. Richardson). — Cut worms are making havoc with corn, potatoes and garden stuff. Indian corn is doing fairly well, though it germinated poorly and some fields had to be planted over. Haying has not begun and grass is short and backward. No early potatoes are raised for market in this district. Dairy cows have dropped in price on account of the poor price received for milk. Pasturage is in fair condition, but needs rain. Strawberries are the only berry grown here for market purposes and are doing well and yielding a good crop.

Barre (John L. Smith). — Indian corn is late, with an increased acreage. Haying has not begun and the crop will be light. Dairy products bring lower prices than usual and dairy cows are also lower than usual in price. Pastures are drying up for lack of rain. There is a fair outlook for apples.

Hubbardston (Chas. C. Colby). — Cut worms are doing unusual damage. Indian corn is looking well, with a much larger acreage than usual. The hay crop on old fields will be very light, but those in good condition will give average crops. The acreage of potatoes will not be as large as for the past few years, but those planted are looking well. The price of dairy cows is lower just at present, owing to a

surplus in the milk supply. Pastures are in good condition. There is a prospect for a large crop of blueberries; apples will be about an average crop. Many of our farmers are planning to put in millet and other forage crops, owing to the shortage of hay.

Petersham (B. W. Spooner). — Potato bugs and cut worms are doing damage. Corn did not come up evenly, but more corn than usual will be planted. Not much haying has been done as yet, and there will not be a large crop, owing to drought. Very few vegetables are raised for market here. There is about the usual acreage of early potatoes. Dairy products are not quite as high as in former years and dairy cows are in good supply. At this date pasturage is in good condition. Fruits and berries are little raised.

Gardner (W. E. Knight). — Cut worms are doing damage. Corn is in fair condition, with acreage increased 20 per cent. Haying has not begun; crop fair on well manured fields, other fields light. Few potatoes are grown except for home use. Prices for dairy products are low and the supply ample; cows are lower than usual, especially the poorer grades. Pastures are in normal condition. The outlook is fair for fruits and berries.

Princeton (A. O. Tyler). — Cut worms, potato bugs and currant worms are doing damage. Indian corn is backward; acreage increased. Haying has not begun and the prospect is for a light crop. There is about the usual acreage of early potatoes and they are looking well, though a little backward. Very little market-gardening is done here. The price of milk is about the same as usual, butter lower; dairy cows about as usual in price. Pasturage is in poor condition, owing to dry weather. Strawberries are a light crop; currants light; cherries, plums and peaches good.

Sterling (Henry S. Sawyer). — Indian corn is looking well with a larger acreage than in previous years. Haying has commenced and the prospect for the crop is very good. There is about the usual acreage of early potatoes and they are looking well. Garden crops are rather late and have suffered much from cut worms. Dairy products are about the same as last year in quantity and price; good dairy cows are not plenty. Pastures have improved since the rains. Apples, pears and plums bid fair for a good crop; strawberries not plenty.

Leicester (H. H. Kingsbury). — Potato bugs, flea beetles, cut worms and squash bugs are doing damage. Corn is somewhat backward, but of good color, and about the usual acreage. No haying has been done as yet and with few exceptions the crop will be less than normal. About the usual acreage of early potatoes has been put in and they promise a good crop. Early market-garden crops are light in yield, but bring good prices. The production of milk has equalled the demand, but prices of cows have lowered somewhat. Pasturage is remarkably short for the time of year. The prospect is very good for apples, pears, grapes and wild berries.

Worcester (H. R. KINNEY). — Cut worms are the most troublesome insect. Indian corn is growing slowly and is not of good color. Haying has begun and the prospect is for a light crop. The acreage of early potatoes is only fair and they are not looking at all well. The yield of early market-garden crops has been light and prices good. Pasturage is in very good condition, considering the early drought. Strawberries seem to be very poor and a very light crop; raspberries were badly winterkilled; apples were only a light set.

Auburn (WM. GILBERT). — Cut worms and tent caterpillars are doing much damage. Indian corn is very backward, most of it had to be planted over; acreage about 25 per cent greater than last year. Haying has just begun and the prospect is for a light crop. No early potatoes are raised here this year. The quantity and price of dairy products are about the same as last year and dairy cows are scarce and high. Pastures are looking better than usual since the rain came. Strawberries are a good crop; raspberries about half a crop. All last fall's seeding is looking badly.

Southborough (EDWARD F. COLLINS). — Potato bugs, cut worms and codling moths are doing damage. The acreage of Indian corn is 10 per cent greater than last year and is looking well, though backward. Haying has just begun, with a three-fourths crop. There were 30 per cent less potatoes planted than last year, and they came up uneven, owing to cut worms and drought. Yield of early market-garden crops less than usual, but prices better. There is about the usual amount of dairy products at the usual prices. Pasturage is in fair condition, though injured by drought. Apples look well and promise a full crop; also peaches.

Milford (JOHN J. O'SULLIVAN). — Cut worms are doing damage. Indian corn is in fair condition, with the acreage about the same as usual. Haying has not yet begun and the prospect for the crop is good. Early potatoes promise well, with about the usual acreage. Early market-garden crops have made fair yields, with good prices, and the prospect is fair for later ones. The quantity and price of dairy products is the same as usual, but dairy cows are higher in price. Pastures are in fair condition. The prospect is fair for strawberries; other berries very little grown.

MIDDLESEX COUNTY.

Holliston (L. E. LITTLEFIELD). — Cut worms, squash bugs, elm leaf beetles and rose bugs are doing damage. Corn is looking well and the acreage is about the same as last year. Haying has not begun as yet and a light crop will be harvested. Early potatoes will be a little late this year, but a good crop is promised now; acreage not large. Early garden crops will be late this year, but are bringing good prices. The quantity of dairy products is not as large as in former years and the price is lower. Pastures are getting rather short now owing to dry

weather. Strawberries are not doing as well as usual and seem to be scarce; peaches a light crop, but more than last year; raspberries, blackberries and currants promise to do well; plums seem to be dropping off quite badly, while cherries are doing finely.

Sudbury (E. W. Goodnow). — Gypsy and brown tail moths are proving most injurious in this locality. Indian corn is looking well, but is backward. Very little haying has been done, but the crop will be light. The usual acreage of potatoes was planted, but they are very uneven. The yield and price of market-garden crops is about normal. Dairy products are low in price and cows higher than in former years. Pasturage in this locality is looking well. The outlook for apples, pears, plums and berries is good.

Maynard (L. H. Maynard). — Cut worms, potato bugs, elm leaf beetles, gypsy and brown tail moths are doing damage. Indian corn is late and looks poorly. No hay has been cut as yet and the crop will be shorter than for many years. The acreage for potatoes is about the same as in former years and they are late, but look well since the rain. Early market-garden crops are a failure in this section owing to drought. The price of milk nets the farmer less than for ten years; dairy cows are scarce and high. Pastures are improving since the rains, but have been very short. Strawberries are short and late, the plants making a poor growth last summer because of drought, and in some places they are an entire failure. Grapes, currants and other small fruits promise well.

Westford (J. W. Fletcher). — Gypsy moths are doing much damage. Indian corn is looking very well and the acreage is on the increase. Haying has not yet begun and there will be but about half a crop. The acreage of early potatoes is about the same as usual and they look very well. Quantity and price of dairy products and cows about as usual. Pastures are in good condition. Strawberries are a short crop; other berries doing well.

Townsend (Geo. A. Wilder). — Brown tail and gypsy moths are doing damage. Corn has been checked somewhat by the cold weather; acreage about the same as usual. Haying has begun and there will be a light crop. There is the usual acreage of early potatoes and they look well. Market-garden crops have so far given light yields and prices have been higher than usual. Dairy products and dairy cows are about as usual in supply and price. Pasturage is in poor condition. Fruits and berries are looking well for an off year.

Chelmsford (W. B. Bullock). — Brown tail and gypsy moths and cut worms are doing damage. Indian corn is looking very well: acreage about the same as in former years. Haying has not begun and the crop will be below the average. Potatoes are looking well, with about the usual acreage. Early market-garden crops are very good, with prices higher than usual. Dairy products are about an average in quantity, but lower in price than usual and cows are cheaper. Pas-

tures are in good condition, owing to the large amount of rain. Strawberries are a short crop with high prices; raspberries and blackberries are looking well.

Lincoln (C. S. Wheeler). — Brown tail and gypsy moths and cut worms are doing damage. Indian corn is late, but is coming along since the rains; acreage about average. Haying has not begun and the crop will be below average. The acreage of early potatoes is about the same as usual, and the crop, while late, is looking fairly well. Early market-garden crops are average in yield and price. Milk is the only dairy product here, price too low, but quantity average; cows of good quality scarce and high. Strawberries are about through bearing, crop small but prices good; few other berries grown. Pastures are in fair condition.

Lexington (Howard M. Munroe). — Potato bugs, gypsy moths, and brown-tail moths are doing damage; cut worms are about through working. Corn looks well, but is not making quite the growth it should, on account of cool nights; acreage larger than formerly. Haying has not begun to any extent; prospect is for about 75 per cent of a normal crop. The acreage of early potatoes is smaller than in previous years and the crop will probably not be up to the average. Early market-garden crops were very light and prices very high; prospect is for light crops later on. Prices for dairy products are lower and the supply of dairy cows is short and prices higher than in former years. Pasturage is in poor condition, but better than last month. Peaches promise a full crop; also pears; apples uneven, some orchards full, others a very light crop; unsprayed apple trees are a sorry sight.

Stoneham (J. E. Wiley). — Cut worms and gypsy moths are doing damage. Haying has begun and there will be a good crop. Acreage of early potatoes normal, promise for crop good. Early market-garden crops gave good yields, with prices higher than usual; later ones promise to be less plentiful. Pastures have improved with the recent rains.

Newton (G. L. Marcy). — Gypsy moths are doing damage. Indian corn is in good condition. Haying has not begun and the prospect for the crop is poor. Early potatoes are not much grown. The weather has been too dry for market-garden crops until lately. Dairy products do not bring a price to compare with cost and labor. We had a hail storm that did a great deal of damage to fruit and tender crops on the 20th of June, in some parts of the city.

ESSEX COUNTY.

Merrimac (S. B. Sargent). — Cut worms, gypsy and brown tail moths are doing damage. Fully as much Indian corn was planted as usual and it is looking fairly well. Some hay has been cut and it is a very light crop. There is about an average acreage of early potatoes and they have improved since the rains. Plenty of dairy products to

supply the demand at last year's prices. Pastures are always poor with us.

Groveland (A. S. Longfellow). — Gypsy moths are devastating the forests. Corn is looking fairly well where it came up well; acreage somewhat increased. No haying has been done as yet and the prospect is for a light crop. There are rather less potatoes grown than usual and they do not promise well. Early market-garden crops gave light yields and correspondingly better prices. Dairy products are much lower than formerly in price. Pasturage is very short though somewhat improved by recent rains. Strawberries are not an average crop, owing to drought.

Methuen (Frederick A. Russell). — Tent caterpillars, brown-tail and gypsy moth caterpillars, cabbage maggots and potato bugs are doing damage. Corn is small, with acreage about as last year. Haying has not yet begun, but the prospect for the crop is good. The acreage of early potatoes is smaller than usual and the prospect for the crop is poor. Yield of early market-garden crops light, but prices good; prospect for light crops for later ones. The price of milk is about the same as last year, also of dairy cows. Pasturage is in very poor condition. Strawberries were less than half a crop; all other fruits very light. Celery, cabbage and cauliflower plants are very scarce and poor.

Rowley (D. H. O'Brien). — Brown tail and gypsy moth caterpillars, onion and cabbage maggots, cut worms and cabbage worms are doing damage. Indian corn is below the average in condition with a slight increase in acreage. Haying has not begun, but the prospect is for a light crop. The acreage of early potatoes is below the average and the outlook is not encouraging. Early market-garden crops show a 50 per cent yield, but none have been marketed as yet. Quantity of dairy products below average, little change in price; supply of cows less than usual and prices lower than last year. Pastures are in poor condition. Strawberries are a fair crop; apples promise half a crop; pears 25 per cent; blackberries good. Spring seeding is a failure. Insects are more troublesome than ever before.

Topsfield (B. P. Pike). — Cut worms and gypsy moth caterpillars are doing damage. Indian corn is late and uneven; acreage about as last year. Haying has not begun and there will not be more than half a crop. The acreage of early potatoes is less than usual and they have suffered considerably from dry weather and cut worms. Early market-garden crops are not marketed as yet and acres of them have had to be replanted. Prices for dairy products are a little higher than usual and the quantity short. There is very little feed in pastures. Strawberries are a fair crop and apples promise half a crop.

Danvers (Charles H. Preston). — Gypsy moths are doing some damage. Indian corn is in poor condition. The hay crop is very light. There is an average acreage of early potatoes and they are in poor condition. The yield of early market-garden crops is very much

under the average, but prices are good. Prices for dairy products are well up to former years. Pasturage is in poor condition. The outlook is for a light crop for most fruits and berries.

NORFOLK COUNTY.

Cohasset (Ellery C. Bates). — Cut worms are doing some damage. More Indian corn was planted than usual. Haying has not begun and there will be a fair crop. The acreage of early potatoes is normal and they promise well. Early market-garden crops are normal in yield and price. Dairy products and dairy cows are average in supply and price. Pasturage is in fair condition. There is about a two-thirds crop of strawberries.

Canton (Edwin V. Kinsley). — Cabbage worms are the only insect doing much harm. Corn is looking well, with a full average acreage. Haying has not begun and the crop will be light. The acreage of early potatoes is about the same as usual and the crop looks very thrifty. Early market-garden crops are light and prices good; later crops look well. Milk is short for the time of year and good dairy cows are high; price of milk same as last year. Pastures are in normal condition. Strawberries are a good crop but coming on slowly; blackberries and raspberries good.

Norwood (F. A. Fales). — Cut worms and potato bugs are doing damage. Corn is late but looking well, though there was some damage from hail; acreage increased 20 per cent. Haying has not begun and the crop will be light. The acreage of early potatoes is decreased 25 per cent, and the crop is late and will be light. Early market-garden crops were badly damaged by cut worms, many fields being planted the second time. The price of milk is rather higher than last year, but cows are not quite as high. Pastures were poor in May, but late rains have improved them. Strawberries are fine and a good crop.

Millis (E. F. Richardson). — Potato bugs, spittle insects and cut worms are doing damage. Indian corn is backward, with about the average acreage. Haying has not begun and there will not be more than half a crop. Early potatoes are less than an average acreage, but promise well. Early market-garden crops were light, with prices higher than usual. The quantity and price of both milk and cows was less than last year. Pastures are light and dry. Fruits and berries promise less than average crops.

Franklin (C. M. Allen). — The brown-tail moth caterpillars are doing some damage. Indian corn is backward, but looks well; acreage increased 20 per cent. Haying has not begun and the crop is a poor one. The acreage of early potatoes is increased and they look well. The quantity of dairy cows is light and price high and cows are very high. Pasturage is in poor condition. Strawberries are a very poor crop, and all fruits and berries promise to be light crops.

Foxborough (Wm. E. Perkins). — Corn is looking well and the acre-

age is about the same as last year. Haying has begun, with a light crop. Butter is lower than usual, but cream and milk are in good demand at last year's prices. Pasturage is in poor condition. Prices for strawberries are running lower than last year. The recent rains have done a great deal of good.

BRISTOL COUNTY.

Easton (Wm. N. Howard). — Maggots on turnips and cabbages are especially destructive. Indian corn looks fairly well; acreage about normal. Haying will begin about June 26, crop good on low land, but light on uplands. Acreage and condition of early potatoes about normal. The prospect is good for market-garden crops, with slight damage from hail. Dairy products are the same in quantity and price as for the past few years; dairy cows are high. Pasturage is in very fair condition. Apples are looking well, more care being taken of orchards than in the past; strawberries are doing well.

Mansfield (E. Jasper Fisher). — Corn is very backward and the acreage is less than last year. Haying has begun and the crop will be very light. Early potatoes are not raised for market. No market-garden crops have been marketed as yet. Dairy products are somewhat higher than last years, and good cows very much higher. Pasturage is very light, except on low ground. Strawberries are very good; prospect for cranberries fine; apples light; pears fairly good and plums good.

Rehoboth (Adin B. Horton). — Cut worms are doing a great deal of damage. Indian corn is looking well, and the acreage is 90 per cent of the normal. Haying has not begun, and there will not be over a two-thirds crop, owing to drought. Acreage of early potatoes about as usual, and the crop has suffered from drought. Early market-garden crops are about as usual in yield and price. Dairy products are about the same as last year in price, but cows are 10 per cent higher. Pastures are not in very good condition. Peaches will give 90 per cent of a full crop; apples are looking well; currants about half a crop; not many pears grown; strawberries about 60 per cent of a crop.

Berkley (Rollin H. Babbitt). — Potato bugs and cut worms are doing damage. There is a larger acreage of corn than usual and it is looking well. Haying has not begun as yet and the crop will be light. The acreage of early potatoes is much less than usual, but they are looking well. Early market-garden crops gave fair yields, but prices are low. Dairy products are about the same in price as last year, but cows are scarce and high. Pastures are feeling the need of rain. There is the prospect of a good crop of apples and pears, with some peaches.

Swansea (F. G. Arnold). — Tent caterpillars have been plenty and colonies of gypsy moths and brown-tail moths have been found.

Indian corn is in good condition and the acreage is the same as usual. Haying has begun and the crop is below the normal. The acreage of early potatoes is about as usual and they promise a fair crop. The milk supply is about normal, with prices the same as last year; good cows are scarce and high.

Acushnet (M. S. Douglas). — Cut worms and elm leaf beetles are doing some damage. Indian corn is looking very well and more corn is being planted every year. Haying has begun, with less than a normal crop. The acreage of early potatoes is smaller than usual and those put in early look well. Market-garden crops are not up to the normal, owing to drought. Dairy products are above the normal in quantity and bring good prices. Pasturage is rather short now on account of dry weather. Strawberries are a good crop, but prices are low; raspberries are looking well; peaches fair.

PLYMOUTH COUNTY.

Norwell (Henry A. Turner). — Elm leaf beetles and cut worms have done more damage than usual. Corn is late and small, with the acreage about the same as last year. Very little haying has been done as yet, and the crop promises to be light. Potatoes are not looking as well as usual, but they are growing well now. On account of dry weather early market-garden crops did not germinate well. Dairy products and dairy cows are about normal in supply and price. Pastures have suffered from drought, but are looking better now. The prospect for apples is good, also pears; strawberries are hardly up to the normal.

Hanover (Harrison L. House). — Cut worms and striped squash bugs are doing damage. Indian corn is looking well, with about the usual acreage. Haying has not begun and a very light crop is promised. The acreage of early potatoes is short and the crop very backward. Early market-garden crops are about as usual, with very little raised in this line. Dairy products and dairy cows are normal in supply and price. Pasturage is in fairly good condition. Strawberries are a fair crop.

Brockton (Davis Copeland). — Rose bugs, cut worms and squash bugs are doing damage. Indian corn is looking well where it germinated well. The prospect is better for hay and it bids fair to be a good crop on low land. The acreage of early potatoes is about normal, and they promise well where not injured by hail. Early market-garden crops are about average in price and quantity. Quantity and price of dairy products about as usual; cows are higher in price. Pastures are in fairly good condition. The outlook for fruits and berries is very poor, owing to damage from hail on June 20th, the storm covering the ground with hail two or three inches deep.

Plympton (Winthrop Fillebrown). — Cut worms are more numerous than usual, and potato bugs not as numerous. Indian corn is looking very well and the acreage is much increased. Haying has not

begun and there will be about a 60 per cent crop. Early potatoes are looking well. Dry weather has injured market-garden crops and prices are as usual. Dairy products and prices are equal to last year, and prices of cows have advanced. Fruits and berries promise well, with seasonable rains.

Lakeville (Nathaniel G. Staples). — Potato bugs are doing some damage. Corn is in fair condition, with about the usual acreage. Haying has just begun; crop fair on new fields and light on old. There is the usual acreage of early potatoes and they are looking fairly well. The yield of early market-garden crops was light and prices a little better than usual. The quantity and price of dairy products compares favorably with former years. Pasturage is light. Strawberries were injured by drought; apples are looking well, where sprayed.

Mattapoisett (E. C. Stetson). — Cut worms and potato bugs are doing damage. Corn is looking well, but is rather backward; acreage increased. Haying has not begun and the crop will be rather light. The acreage of early potatoes is about the same as usual and the crop promises well. The prospect is very good for market-garden crops, few having been marketed as yet. Dairy products and dairy cows are much the same as usual in supply and price. Recent rains have helped feed in pastures greatly. Strawberries are a very good crop; raspberries, currants and gooseberries good.

BARNSTABLE COUNTY.

Falmouth (D. R. Wicks). — Cut worms have been very injurious to all kinds of vegetation and potato bugs are plenty. Corn is looking and growing finely, with a much larger acreage than in previous years. Haying has not begun; grass is growing rapidly since the rains and will give perhaps two-thirds of a normal crop. Early potatoes are making a heavy growth of tops and are just in bloom. Most early market-garden crops were fully up to the average in price and yield. Pasturage is in fairly good condition. Tree fruits will mostly give fair crops and bush fruits are promising.

Mashpee (W. F. Hammond). — Cranberry vine worms and cut worms are doing damage. Indian corn is below the average in condition, but the acreage is above the average. Haying has just begun and there will be a two-thirds crop. The acreage of early potatoes is above the average and is looking well. Early garden crops are above the average in yield and price. The price of dairy cows is above the average. Pasturage is in good condition. The outlook is very good for strawberries, raspberries, blackberries and currants.

Dennis (Joshua Crowell). — Cut worms are doing damage. The acreage of Indian corn is about as last year and it is rather backward. Haying has just begun and the crop is not over 75 per cent of that of last year. The acreage of early potatoes is less than usual and the outlook for the crop rather unfavorable. The yield of early market-garden crops is rather less than usual and the prices about the same.

Supply of dairy cows rather less than usual and prices higher. Pastures have improved since the rains and are looking fairly well. The outlook for all fruits and berries is below the average. Cranberries are perhaps the principal crop in this section. The vines were somewhat winterkilled on many bogs and frost in May damaged the fruit buds to quite an extent. The prospect is for not more than 50 to 70 per cent of a full crop.

Brewster (Thomas D. Sears). — Cranberry vine worms and potato bugs are proving injurious. Indian corn is looking well and the acreage is above that of the past few years. Haying has begun, but the crop will be small on account of the dry weather during May. The acreage of potatoes is much the same as last year and the crop promises well. The prospect for market-garden crops is good. The quantity and price of dairy products are much as last year, but the price of dairy cows is higher. Pasturage is looking well since the recent rains. Strawberries are badly blighted and the crop is short; apples and pears are looking well, also the cranberry bogs.

Eastham (A. L. Nickerson). — Cut worms are our worst pest at present. Corn is very late, owing to late planting and the acreage is smaller than usual. Haying has not commenced and the crop is short. Not as many early potatoes have been planted as usual, but they are looking very well. The only market-garden crop raised here is asparagus and we have had a fair season on that. Dairy products and dairy cows are about the same as usual in quantity and price. Pasturage is below the normal in condition. The strawberry crop was more than half spoiled by the rain of last week.

Wellfleet (E. S. Jacobs). — Cut worms are doing damage. Indian corn is about normal in condition and acreage. Haying promises a very good crop. Not as many early potatoes have been raised in this town as formerly. Early market-garden crops are rather backward, cold and dry weather having checked growth. Dairy products and dairy cows are the same as in former years in supply and price. We have a good yield of strawberries and the outlook for huckleberries and blueberries is favorable; raspberries and blackberries not grown to any extent.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — Cut worms, tent caterpillars, potato bugs and white grubs are doing some damage. Corn is very backward, with an average acreage. Some have begun to cut hay, but the prospect for the crop is poor. The acreage of early potatoes is average, but the promise for the crop is poor. The yield of early market-garden crops is much below the average and prices should be high. The prices of dairy products are average; but cows are scarce and high. Pastures are in poor condition. If we have rain soon berries will be plenty. Vegetation is backward, owing to a late spring followed by dry weather.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

CABBAGE AND CAULIFLOWER AS MARKET-GARDEN AND FARM CROPS.

ADAPTED FROM FARMERS' BULLETIN NO. 433 OF THE UNITED STATES DEPARTMENT OF AGRICULTURE, "CABBAGE," BY L. C. CORBETT, HORTICULTURIST, BUREAU OF PLANT INDUSTRY, — ADAPTATION BY HOWARD N. LEGATE, FIRST CLERK.

CABBAGE AS A MARKET-GARDEN CROP.

Cabbage is a crop which is grown by every market gardener located within wagon-hauling distance of an important center of consumption. The statistics of the distribution of the cultivation of cabbage clearly indicate the fact that this is one of the important crops grown by market gardeners. The counties near each of the important centers of population of the United States are almost universally credited with a considerable acreage of cabbage, thus showing that the gardeners of these regions have given considerable attention to the production of this crop.

Soil. — The soil for cabbage must necessarily vary in different localities. In one area it may be of alluvial character, while in another it may be sedentary, and in still another it may be characteristic glacial drift. The fact that cabbage grows well in all these soils indicates its adaptation to a wide range of conditions. The main thing with cabbage is an abundant supply of immediately available plant food. Market gardeners rely chiefly upon stable manure for their supply of plant food. Fertilizers also form an important item in the expense of producing cabbage as a market-garden crop, the quantity used depending upon the quantity and character of the supply of stable manure. The fertilizers chiefly used carry a liberal percentage of available nitrogen in the form of nitrate of soda or sulphate of ammonia (often as much as 4 or 5 per cent), 6 to 8 per cent of phosphoric acid and 8 to 10 per cent of potash. As a result of the wise use of fertilizers the soils of the market-gardening zone around any city or large town rapidly improve in fertility, and the gardener is able to grow a greater variety and larger quantities of products.

In the truck-farming area a few special crops are grown on a very extensive scale, while in market-garden regions a great many crops are grown in succession on a comparatively restricted area. Truck farming is in reality extensive market gardening, while market gardening is the most intensive form of farming. It is the practice of many market gardeners to plant coarse-growing, long-season crops far apart, and interplant one, two or even three short-season, quick-maturing crops between them; or a quick-growing, short-season crop may be planted, and between the rows a crop requiring a longer season, so that as the quick-growing crop is harvested the whole area is given up to the longer-season crop. Cabbage is frequently made the basis of such a combination. Sometimes lettuce and radishes are grown between the rows of cabbage. Sometimes cabbage is planted between the rows of early beets, while late potatoes are frequently planted between the rows of early cabbage. The various combinations of such crops are too numerous to be catalogued.

Young Plants for the Market Garden. — The preparation of cabbage plants for the use of the market gardener in the north is a different matter from growing plants for use on a truck farm in the south. The market gardener at most grows only a few thousand heads. The seed for these can be sown on an area covered by a hotbed or cold-frame sash. The extra early crop is either started in the open in September and transplanted to a cold frame as the frosty nights come on, to be protected through the winter by sash and shutters and transplanted to the open as soon as the ground can be worked in the spring, or the plants may be started in a hotbed from the first of February to the middle of March, depending upon the locality, and hardened off, as the days grow milder, by lifting the sash.

Plants grown and hardened off in this way are nearly as hardy as cold-frame wintered plants. They can with safety be transplanted to the open as soon as the condition of the soil will warrant. As a rule, hotbed-grown plants do not head as quickly as wintered plants; on the other hand, there will be fewer plants that shoot to seed. The grower will, therefore, use the plan best adapted to his cropping system, and may employ both plans in order that the peculiarities of the seasons may be most advantageously met. In some seasons the wintered plants give best results, while other seasons seem to favor the hotbed product. The use of both plans will safeguard the crop to the greatest degree.

Setting Plants in the Field. — The cabbage plants are usually set in the field in rows about 30 inches apart and about 18 inches apart in the row. For the extra early crop the Jersey Wakefield is extensively employed. A later variety may be sown in the hotbed at the same time and the plants given similar treatment, but since the late sort requires a longer season, it will form a succession with the Wakefield, enabling the gardener to maintain a continuous supply up to

the time when he can utilize the crop grown from seed sown in April or May in the open, the plants of which are usually transplanted, in the latitude of New York, to open field from June 20 to July 1. This crop provides a fall supply of cabbage for the market, and when treated as a field crop is used by the sauerkraut factories and the storage houses, and is marketed in carload lots in the southern cities and towns, where extensive manufacturing enterprises are conducted.

Cultivation. — Among market gardeners it is a common expression that "cabbage should be hoed every day." Perhaps no other crop responds more quickly to good cultivation and an ample food supply. This is undoubtedly the explanation of the above-quoted expression. In cultivating cabbage the work should be frequent and thorough, but the cultivation should not be deep. The aim should be to destroy all competing weeds, and maintain a loose, friable layer of soil about 2 inches deep over the surface of the area devoted to cabbage.

Harvesting. — The early cabbage which is grown by the market gardener is cut, carefully trimmed, and marketed from his wagon or stall. The later crop, which is harvested in the fall, may not be marketed immediately, but may be stored temporarily in a cool, well-ventilated building, in which case the heads are usually cut from the stalks, carefully trimmed and stored in small bins or on shelves. If such facilities are not available an area on a well-drained portion of the field is prepared for the storage of the cabbage. The preparation usually consists in leveling an area wide enough to allow about five heads of cabbage to be placed, roots up, in a continuous row or belt, three in the first layer and two in the second. The outer leaves are all preserved and carefully wrapped around the heads as they are placed, after which the whole is covered with a layer of straw or marsh hay, and, as the weather increases in severity, with a slight layer of earth. In the milder portions of the country this protection is employed for the whole winter. Farther north the soil layer must be increased, and where winters are severe storage houses should be used rather than this primitive method of storing.

If the crop is to be stored on a more extensive scale it may be placed on a ventilated platform and piled in long ricks, and then covered with rye straw and a layer of earth.

Varieties. — The varieties of cabbage used by market gardeners include not only the Jersey Wakefield for extra early but a variety of the early summer or sure-head type for midseason with some of the Flat Dutch sorts as the main fall crop.

Cabbage as a Farm Crop.

Cabbage finds its most congenial habitat as a farm crop in the northern tier of States, including those bordering on the Great Lakes, the New England States, and, to a less extent, in Kentucky, Tennessee and Missouri. New York grows almost three times the acreage of any

other State as a farm crop. It is this farm crop of cabbage which finds its way to the sauerkraut factories, to the cities of both the north and the south as the cool days of fall and early winter come on, and to the large storage houses distributed through New York and Wisconsin.

Soil. — The soil upon which cabbage is most extensively grown in this region is either rich alluvial bottom land or the rich prairies of the States west of New York and Pennsylvania. Cabbage is a bulky product and usually does not sell for a very high price per ton, but the large tonnage produced per acre, and the fact that it is consumed by all classes, account very largely for the extensive acreage grown throughout the area of dense population.

Preparation of the Land. — Where grown as a farm crop cabbage is used as one of the factors in a crop rotation for the farm, and may be made to occupy a portion of the clover sod turned down in the year when clover is turned under to provide for other crops. A common rotation is to use corn, followed by oats with which clover is sown. The clover is cut one season and turned under the following spring, the area being devoted to cabbage and potatoes. The clover sod is supplemented by a heavy dressing of stable manure on the portion to be devoted to cabbage. If manure is not available the necessary supply of plant food is made up by the use of a high-grade fertilizer carrying $3\frac{1}{2}$ or 4 per cent of nitrogen, 6 or 8 per cent of phosphoric acid, and 8 or 10 per cent of potash, applied at the rate of 500 to 1,000 pounds to the acre.

Starting the Seedlings. — When cabbage is grown as a farm crop the seed bed is prepared in the open in a sheltered place. In the latitude of central New York seeds are sown in the open early in May. The young plants are kept free from weeds, and should be ready to transplant to the field about June 20.

The choice of the site for the seed bed may determine the success or failure of the whole enterprise. The vigor of the plants and their freedom from disease are factors of prime importance. The seed bed should, therefore, be located only on areas known to be free from clubroot and rot organisms. Areas where cabbage has been grown or where cabbage plants have been propagated in previous years are to be avoided, as are also manures containing cabbage refuse. The manure from stalls or pigsties where cabbage has been fed is to be avoided on account of its liability to carry clubroot and rot organisms.

Setting the Plants in the Field. — In some localities it is customary to set the plants in check rows about 30 inches apart each way, so that they can be cultivated in both directions. In other sections the plants are set in rows one way only, and are placed 18 to 24 inches apart in the row. With the large-growing late sorts, however, 30 inches between the plants in the row is not too much space. If the transplanting is to be done by hand, it will be performed by puddling the plants and setting them with a dibble. If carried on very extensively

the work can, as a rule, be more economically done by utilizing one of the horsepower transplanters, in which case the plants are frequently set about 20 inches apart in the row and cultivated in one direction only. Painstaking growers, however, mark the field 30 inches apart in one direction and drive the plant-setting machine at right angles to these marks, thus enabling the setters to place the plants in check rows 30 by 36 inches apart. This plan has the advantage of placing the plants at better intervals and permits of cultivation in both directions early in the season.

As soon as the plants have been set in the field, cultivation is started and kept up with suitable implements, depending upon the size and character of the plants, until the cultivator can no longer be run between the expanded leaves of the crop. Attention from this time on is necessary to protect the crop from insect enemies, such as the cabbage worms and the aphides or "lice."

Harvesting. — At harvest time, whether the cabbage is to be shipped, carried to the sauerkraut factory or stored, a wagon provided with a very deep body is driven across the field, the heads of two rows having been cut and laid to one side in advance of the team. Men accompany the team and gather the heads which have been cut, carefully trim them and gently toss them to a person in the wagon, who loads them with equal care. Heads intended for long shipment or for storage should be very carefully handled, so as not to bruise or in any way injure them. In unloading to the car or storage house the same precautions in careful handling should be observed as in gathering from the field.

Varieties. — The varieties which may be used for field cultivation depend upon the purpose for which the cabbage is intended. If for sauerkraut or for immediate consumption, the Flat Dutch type from American-grown seed is extensively employed in the eastern part of the United States. In the irrigated section of Colorado, in the vicinity of Greeley, where cabbage is grown for sauerkraut, a variety known as Scotch Cross is almost universally grown. If the cabbage is intended for storage the Danish Ball Head, from imported seed, is almost exclusively used.

Storage. — The prerequisites for the successful storing of cabbages are: (1) carefully grown and carefully handled heads of a sort well adapted for storing; (2) storage warehouses so constructed and arranged as to prevent drip from the ceiling or roof striking the stored heads; and (3) such arrangement and control of the ventilation and temperature of the building as to prevent the condensation of moisture on the cabbage while in storage.

The Danish Ball Head, from imported seed, as has been stated, is the variety chiefly grown for storage purposes. The heads should be very carefully cut and closely trimmed, so that no loose leaves get into the storage house. In hauling cabbage from the field to the store-

house, spring wagons should be used, and the heads should be passed from hand to hand and never thrown into the wagon body. The same care should be observed in placing the heads in storage.

The general type of construction employed in commercial storage houses is that of a broad, low house with an alley sufficiently wide to admit a team and wagon through the center, and with the storage bins or shelves arranged on either side. For farm storage a house with no walks or driveways, and no waste space, is very satisfactory. At storage time the cabbages are received through the windows, and they may be discharged either through the windows or through the door. If the heads are to be stored in bins, the bins should be narrow and not more than 16 or 18 feet from front to back, and the heads not more than 6 or 7 feet in depth in each bin. Several bins may be placed one above another in the same section by placing a waterproof flooring between the bins, so that the drip caused by decaying cabbage or other condensation cannot reach the lower bin from the one above. This plan of storage is not, in general, as satisfactory as to store the cabbage on shelves, in single layers or two or three deep on the shelves. Precautions should be taken to provide an area way between the outside wall of the building and the storage bins or shelves.

The walls of the building should be made so as to provide a dead-air space, to prevent the penetration of frost. If the walls are made of brick, two 4-inch walls could be laid up and tied by a header course, so as to provide an air space 2 or 3 inches wide between the two walls; or a solid 9-inch wall may be constructed, and either a tongued and grooved wall or a lath-and-plaster wall placed on the inside by the use of furring strips. The roof should be provided with a suitable outer covering, either of shingles, of steel or of composition, and should have an inner lining so built as to provide a dead-air space. If the inner lining is made of lumber, the boards should run parallel with the rafters rather than at right angles to them, so that condensation may flow to the eaves rather than fall from each joint. Exits for warm air should be provided by ample ventilators along the ridge, provided with dampers, which can be controlled by ropes extending to the passageways. Cold air from outside can be admitted through apertures in the foundation by means of large terra-cotta pipes, provided with wire netting over the outer end and suitable dampers or shutters on the inside, so that the intake of air can be controlled.

The secret of success in the management of a storage warehouse is to have disease-free, well-matured, firm, carefully-handled stock grown from high-grade seed, and the storage house so constructed that the temperature can be lowered and maintained as near 34° F. as possible throughout the whole storage period. This means that the greatest care must be exercised to take advantage of cool, frosty nights which occur during the storage period, and as soon as the house is filled to keep it closed during the day and open as much as possible during the

night, so as to get the benefit of the low mean temperatures. The other extreme of too low temperature should also be provided against. During protracted cold spells the temperature inside the storage house may get dangerously low. To guard against loss from freezing, oil heaters are placed at suitable intervals in the walks and alleys to maintain the temperature above the danger point.

Storage troubles are more largely the result of careless handling and bad ventilation than of diseases. Practically all of the rotting which takes place during the storage period is the result of saprophytic organisms attacking the badly handled or slightly diseased heads under bad storage conditions. Poor cultivation, bad harvesting methods, a long haul to storage, and rough handling in unloading and storing are all to be avoided if cabbage is to be kept successfully through the storage period.

Insect Enemies and Diseases.

The important enemies of the cabbage as a market-garden or farm crop are the cabbage worms, which in some instances cause considerable loss, the cabbage root maggot, and the cabbage "louse."

Cabbage Worms. — The imported cabbage worm and some other species of cabbage worms can be effectually controlled by the use of (1) Paris green at the rate of 1 pound to 50 gallons of water, or (2) arsenate of lead at the rate of 4 pounds to 50 gallons of water, sprayed on the young plants before the heads are well formed. This treatment should be repeated from time to time, as required, in order to protect the plants. Where a few plants are to be treated insect powder or pyrethrum is sometimes employed for the control of the insect by dusting it upon the plants.

Cabbage Root Maggots. — These insects sometimes cause considerable damage and are difficult to combat. Tarred paper placed about the bases of the stems prevents the flies from depositing their eggs. Injections of carbon bisulphid in the soil are effective in destroying maggots, and another good remedy is found in carbolic acid emulsion, made by dissolving 1 pound of soap in a gallon of boiling water and adding a pint of crude carbolic acid. This mixture is then diluted with thirty times its bulk of water, and poured around the bases of the plants.

The Cabbage Aphis. — Cabbage aphides or "lice" are controlled by the use of contact insecticides, such as kerosene emulsion or whale-oil soap.

Clubroot. — Among the field troubles to which the cabbage is subjece none is of greater economic importance than clubroot. This diseast is peculiar in its method of attack and in the way in which it perpetuates itself. The chief danger with this disease arises from the fact that either the seed bed or the field may be infected and thus contaminate the crop. There is danger, then, in purchasing plants.

Infected plants purchased from a clubroot seed bed might be the means of contaminating one's cabbage land with the disease. Clubroot is a persistent malady. It will remain in the soil for five to seven years. Land so infected should not be used for cabbage, turnips, rape, mustard or any other plant of the cabbage family. The rotation of crops to the exclusion of all cabbage-like plants for a term of years is the only safe way of ridding the land of the disease. This applies with equal force to both seed bed and field. There is no satisfactory remedy known except the following "don'ts:"—

(1) Don't sow cabbage seed on soil infected with clubroot.

(2) Don't plant plants grown in a clubroot-infected seed bed.

(3) Don't use manure containing roots of cabbage infected with clubroot on ground intended for the culture of cabbage or any of its close relatives.

(4) Don't plant cabbage on an infected field within six or seven years after the diseased crop has been harvested.

(5) Don't grow turnips, rape, mustard or other cabbage-like plants on clubroot-infected soil unless you wish to perpetuate the disease.

Cauliflower.

Cauliflower is always grown as a market-garden crop or for home use, never in any sense as a farm crop. Practically everything that has been said in regard to cabbage, as to soil, fertilizers, growing of the plants, preparation of the soil, planting and cultivation, applies with equal force to cauliflower. The only exception worthy of note is that cauliflower may be set somewhat closer in the row than cabbage, but the practice of growers varies, and many set at practically the distance apart recommended for cabbage in the foregoing.

When the head begins to form the leaves should be drawn together and fastened over the head, to keep the sunlight from it. Properly sheltered the head will present the pure white appearance so much admired in the market. If the sun is allowed to touch the heads after they have begun to grow they will first turn green and later reddish. No amount of bleaching will remove this color once it has been acquired; the only way to prevent it is to act in time. The leaves should be drawn together at the top, one at a time, overlapping each other, and fastened together by a wooden pin or skewer, thrust through the leaves, or they may be tied together with raffia or any sort of twine. Both methods are used, and with equal satisfaction, according to the preference of the grower.

Harvesting is controlled by the size of the heads and the state of the market. The stalks are cut and the leaves trimmed off close to the head. Some cauliflower comes into the market, in Massachusetts, in August, but the greater part of the crop is marketed in September and October.

Cauliflower is sometimes stored by setting in celery pits, the roots being set into the sand the same as is done with celery. Here they will increase somewhat in size, and, as no light is admitted to the pit, will not suffer in appearance. About half the leaves are cut off when cauliflower is stored in this manner. Sold in midwinter or later they often bring very high prices, and this method of storing is usually so profitable that it is surprising that it is not practiced to a greater extent than is the case.

There is no mystery about the growing of cauliflower, if treated exactly like cabbage, except for the protection by the leaves, as above indicated, it can be grown in any garden, and forms so attractive and tempting a table vegetable that it should be among those grown by every person having a garden for the furnishing of his own table.

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MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF JULY, 1911.

ROOT CROPS OF THE MARKET GARDEN.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary.*

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

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Crop Report for the Month of July, 1911.

Office of State Board of Agriculture,
Boston, Mass., Aug. 1, 1911.

The current issue of the report, crop report for July, contains another of our series of articles on vegetable crops. This month root crops and onions are treated, under the title of "The principal root crops of the market-garden," by Harold F. Thompson, formerly professor of market gardening at the Massachusetts Agricultural College, and now in the market-garden business in Seekonk, Mass. He has treated these important crops in an interesting and thorough manner, and the article forms an important contribution to the literature of the business.

Progress of the Season.

The Crop Reporting Board of the Bureau of Statistics of the United States Department of Agriculture, in Crop Reporter for July, 1911, give their estimates as to acreage and condition of the principal farm crops of the country in the following table: —

Crop.	Acreage, 1911.		Condition July 1 (Per Cent).			Condition June 1, 1911 (Per Cent).
	Per Cent of 1910.	Acres.	1911.	1910.	Ten-year Average.	
Winter wheat,	106.6	31,367,000	76.8	81.5	81.4	80.4
Spring wheat,	104.9	20,757,000	73.8	61.6	87.8	94.6
All wheat,	105.9	52,124,000	75.6	73.5	84.4	86.1
Corn,	101.7	115,939,000	80.1	85.4	84.7	–
Oats,	99.9	35,250,000	68.8	82.2	86.3	85.7
Barley,	97.0	7,038,000	72.1	73.7	87.9	90.2
Rye,	–	–	85.0	87.5	90.8	88.6
White potatoes,	97.3	3,495,000	76.0	86.3	90.4	–
Tobacco,	72.4	893,200	72.6	85.3	86.0	–
Flax,	103.3	3,013,000	80.9	65.0	187.8	–
Rice,	97.6	705,700	87.7	86.3	88.6	–
Hay,	–	–	64.9	80.2	85.7	76.8

The yields indicated by the condition of crops for July, the final yield in 1910 and the average for 1906–10 are given

[1] Eight-year average.

in the following table. The indicated yields for 1911 are obtained by applying to the average yields (five-year average) the ratio of July 1 conditions to the average conditions on July 1 (five-year average).

Crop.	Yield per Acre.			Indicated Total Production in 1911, compared with Total Production (Per Cent) in—	
	Indicated by Condition, 1911.	Final, 1910.	Average, 1906-10.	1910.	Average, 1906-10.
Winter wheat (bushels),	14.60	15.80	15.50	98.7	101.7
Spring wheat (bushels),	11.80	11.70	13.50	105.8	100.7
All wheat (bushels),	13.50	14.10	14.70	101.1	101.4
Corn (bushels),	25.50	27.40	27.10	94.6	104.9
Oats (bushels),	23.20	31.90	28.40	72.6	87.7
Barley (bushels),	20.90	22.40	24.80	90.7	88.4
Rye (bushels),	15.50	16.30	16.40	-	-
White potatoes (bushels),	81.70	94.40	96.90	84.3	89.2
Tobacco (pounds),	698.10	797.80	826.00	63.3	77.3
Flax (bushels),	8.60	4.80	[1]9.90	183.6	110.5
Rice (bushels),	32.20	33.90	32.40	92.7	105.8
Hay (tons)	1.08	1.33	1.41	-	-

[1] Average for 1905-09.

In Massachusetts the acreage of corn is 52,000 acres, or 104, as compared with last year, and the condition July 1 was 91; the average condition of oats was 92; the acreage of tobacco was 4,500 acres, or 103, as compared with last year, and the average condition was 96; the acreage of Irish potatoes was 34,000 acres, or 96, as compared with last year, and the average condition was 92; the average condition of timothy was 78; of clover for hay, 70; of alfalfa, 77; of pastures, 77; of apples, 76; of peaches, 71; of pears, 75; of grapes, 82; the production of strawberries was 80; the average condition of tomatoes was 83; of cabbages, 81; of onions, 77; of Lima beans, 83; of beans (dry), 88; of blackberries, 88; of raspberries, 88; of watermelons, 77; of cantaloupes, 85; of millet, 88.

Temperature and Rainfall for the Whole Country.

[From United States National Weekly Weather Bulletin.]

Week ending July 10. — For the week as a whole the average temperature from the Rocky Mountains eastward was everywhere above the normal, save over a small area along

the Gulf coast and over the Florida peninsula. It was unusually warm from the middle Mississippi valley and upper Lake region eastward to the Atlantic coast, where the average daily excess ranged from 6° to 12°. From the Rocky Mountains westward to the Pacific coast the mean temperature continued generally below the normal. No well-developed rain area crossed the United States during the week, but conditions were favorable for the occurrence of local thunderstorms over the districts from the middle Plains region eastward to the Appalachian Mountains and the south Atlantic coast. West of the Rocky Mountains there was a general absence of beneficial rains.

Week ending July 17. — For the week as a whole the mean temperature was below the normal for the first time in many weeks over portions of the great central valleys, and it was decidedly cool over the upper Mississippi and middle Missouri valleys, the average daily deficiency ranging from 4° to 8° per day. Over the Atlantic coast and lower Lake region the average temperature for the week was above the normal, the excess being quite pronounced in the New England States. West of the Rocky Mountains the temperature averaged above the normal for the first time in many weeks. No general area of low pressure crossed the country during the week, but conditions were favorable for the occurrence of local showers and thunder storms, especially during the latter part of the week, when they were fairly general and heavy over most of the Gulf States, Ohio valley, Lake region and portions of the Middle Atlantic States. Over central and northern New England there was little rain during the week, and over the more northern districts, from the upper Lakes westward, there was a rather general lack of precipitation.

Week ending July 24. — For the week as a whole the mean temperature was below the normal over the greater part of the country, the greatest deficiency occurring in the Missouri, Mississippi and Ohio valleys and Lake region. In portions of the upper Lake region, upper Mississippi and Missouri valleys the average temperature ranged from 6° to 10° below the normal. Along the immediate Atlantic coast the temperature average for the week was about normal or slightly above.

For the week as a whole there were abundant and well-distributed rains over large portions of the country from the Plains eastward, except that only light showers occurred in portions of the lower Ohio valley, southern Appalachian Mountain region, portions of southeastern New England, central and southern Florida, and at a few points elsewhere.

Special Telegraphic Reports.

[Weather Bureau, Boston.]

Week ending July 10. — New England. Boston: Very high temperature, with readings about 100°, prevailed until Thursday night, when it became cooler, with scattered local showers, being severe in places. The remainder of the week was fair, with seasonable temperatures. Rain is generally needed.

Week ending July 17. — New England. Boston: Intense heat prevailed the first half of the week, but moderate temperatures the last half. There were only scattered local showers, and the ground is becoming very dry. Rain is greatly needed.

Week ending July 24. — New England. Boston: The temperature was seasonable. The week continued very dry in southern New Hampshire, eastern Massachusetts and Rhode Island, where rain is greatly needed. Elsewhere copious showers occurred and were of much benefit.

The Weather of July, 1911.

The month was the warmest of its name within the records of official observations, and, until near its close, the driest July in over forty years. It opened with temperatures in the 90s, which increased to over 100° by the third, and continued through the 4th, 5th and 6th. There was temporary relief from the torrid heat on the 7th and the 8th, during which the temperatures ranged in the 80s, followed by tropical-like temperatures again from the 9th to the 12th inclusive. During the rest of the month the temperature averaged near the normal, excepting a cool spell from the 26th to the 29th inclusive. The month as a whole averaged about 5° warmer

than the normal July. Fortunately the excessively warm days were attended by moisture or humidity much below the average, otherwise the unusually oppressive weather would have been almost unbearable. Excepting scattered showers, with light to moderate rainfall, there was no precipitation till the 24th, when copious rains fell in nearly all sections of the State. On the 28th rains occurred, ranging from moderate in interior and western sections to a downpour of several inches along the coast. The rainfall during this storm brought the total of the month up to and in some sections much above the July normal. The drought preceding the 24th resulted in great damage to the agricultural interests, although the rains during the remainder of the month were of inestimable benefit to manifold interests. Viewed as a whole, the month was remarkable for heat and drought.

Publications.

The only publication of the month was the second edition of "Massachusetts: Her Agricultural Resources, Advantages and Opportunities, with a List of Farms for Sale." Half the edition has been delivered from the printers and copies will be sent free on application to any address. The crop report for June, containing an article on "Cabbage and cauliflower as market-garden and farm crops," is still available. A complete list of the available publications of the Board will be sent to any one requesting it.

State Board of Agriculture Exhibit.

An exhibit has been prepared of the work of the Board for the Conference of Rural Social Workers, at the Massachusetts Agricultural College, on August 2, 3 and 4 next. It consists of cards giving a concise statement of the work of the Board in its various departments, entered under the head of "Activities:" samples of the literature of the Board, mounted on cards, with labels and brief descriptions, together with information as to how they can be obtained; and charts showing the production of the various crops and farm products in Massachusetts, by towns, the different colors in which the

towns have been filled in showing the amount of the particular product or crop produced in that town, with an explanatory key attached to the map. The whole forms a very complete exposition of the work of the Board. The exhibit will be returned to the Board after the conference is over, and any one interested can then have an opportunity to look it over at the office of the Board.

In the circular to correspondents, returnable July 25, the following questions were asked: —

1. What insects are proving most troublesome in your locality?
2. What is the condition of Indian corn, and what proportion of the crop is grown for ensilage?
3. What is the quantity and quality of the hay crop as compared with former years?
4. Are more forage crops than usual being raised, and what is their condition?
5. What is the condition of market-garden crops, including potatoes, and how have those already harvested compared in yield and price with former years?
6. What is the prospect for apples, pears, peaches, plums, quinces, grapes and cranberries?
7. What is the condition of pasturage in your locality?
8. Have any new apple orchards been set in your town during 1910 and 1911, and, if so, what is your estimate of the number of acres?

Returns were received from 135 correspondents, and from them the following summary has been prepared: —

Insects.

Seldom have there been as few complaints of insects doing damage as was the case this month. Potato bugs do not appear to be unusually prevalent in any locality and are easily held in check. Many correspondents report that there is no appreciable damage from insects, or, what is equivalent, leave the question unanswered. Gypsy and brown-tail moths con-

tinue to extend their territory. Other insects mentioned are tent caterpillars, fall web worms, black and striped squash bugs, spittle insects and elm-leaf beetles.

Indian Corn.

The hot weather brought corn forward very rapidly, and in western sections it was well up to the average, as a whole, at time of making returns, though possibly beginning to feel the drought. In central and eastern sections it was reported as having suffered considerably from drought, though not as much as other crops, and to be rolling badly on light land. With the recent rains and with seasonably warm weather for the next few weeks the crop should come forward rapidly, and make a good yield in almost all sections. The amount of the crop used for ensilage varies widely, and the proportion does not seem to be increasing, as the crop has a greater vogue for grain during the last few years than formerly. Most of the increased acreage of last year and this year was put in for that purpose.

The Hay Crop.

The hay crop was very light for the State as a whole, varying from half a crop in eastern sections to three-fourths of a normal crop in the western counties. A very few correspondents report the crop to have been up to the normal, but these reports are exceptions, and due to purely local causes. There would seem to have been very little clover in the crop, a factor which will materially decrease its value for feeding purposes. The quality was generally good, except that in many cases it was allowed to stand too long and suffered from overripeness, with consequently decreased value. The prospect for the second crop was poor at time of making returns, owing to the drought and hot weather. What the effect of the recent rains will be remains to be seen.

Forage Crops.

An attempt was made to increase the acreage of forage crops, to make up for the short hay crop, but it was not very successful, owing to poor germination, from lack of moist-

ure. In some cases correspondents report that less than the usual acreage has been sown, owing to the dry and baked condition of the ground. Forage crops were generally in poor condition, and greatly in need of rain.

Market-garden Crops.

Market-garden crops have suffered severely from drought, and have been short in almost all cases and in almost all localities. Prices have been correspondingly high, and the market-garden business has therefore been more satisfactory than many lines of farming. Later crops look well, though needing rain, and should do well now that the drought is broken. Early potatoes were a very light crop, though few had been dug at time of making returns. Some instances of almost total failure were reported. Later potatoes looked well and promised a good crop, though the effect of the drought may be more far-reaching than present indications would lead one to believe.

Fruits.

The drought showed its worst effects in the unusually heavy drop of all kinds of fruit, apples suffering especially. The apple crop does not now promise to be more than half a normal yield for the State as a whole. It is possible that with more normal conditions as to rainfall the crop will improve beyond present expectations. Often a midsummer shortage leads to better prices in the autumn. Pears promise fairly well, as do also plums. Peaches seem to be a better crop than usual. Quinces are relatively unimportant and there are few reports in regard to them. Grapes promise a good yield, many reporting that the vines are loaded. Cranberries are reported to have felt the effects of the hot, dry weather severely and to promise considerably less than an average crop. Wild berries generally promise well.

Pasturage.

Pastures were in fairly good condition in the western counties, where showers have kept them green and growing in many localities. In Worcester County the condition is not

so favorable, and becomes rapidly worse as eastern sections are considered, until in the eastern counties almost all correspondents report that it is all dried or burned up. In many towns farmers are feeding at the barn, as in midwinter, in some cases, owing to failure of forage crops, having to encroach on their winter's supply of hay.

Small Grains.

Rye was a fair crop in most sections and oats about a three-fourths crop. Both suffered from drought. As forage crops they did fairly well, but to date have not furnished the feed which they ordinarily do. Barley is practically not grown except as a late forage crop. Rye is mainly grown for the straw, which was reported as shorter than usual, owing to the effects of drought.

Orchard Planting.

Orchard planting continues about as last year, with perhaps a slight increase in interest. Of the 117 correspondents answering this question 72 report that there have been no orchards set out in 1910 and 1911, 10 that a few trees but no orchards have been set out, while 35 report some orchard planting, ranging from 2 acres to 2,500 trees. Better care and more careful spraying are the rule among our farmers, and the old orchards now on our farms are receiving a great deal more attention than was the case a few years ago.

NOTES OF CORRESPONDENTS.

(Returned to us July 25.)

BERKSHIRE COUNTY.

New Marlborough (E. W. Rhoades). — The warm weather has helped corn to make a good growth; only a few of the larger farmers grow ensilage. Only a fair crop of hay is reported; quality good, but no clover. About the usual amount of forage crops are being grown. Early potatoes do not yield very well but it is expected that the recent rains will help the late crop. Leaves are diseased on most apple trees and dropping badly; grapes look well. Pastures have suffered from drought, but are looking better now. A fair crop of rye was secured and oats promise well. No orchards are being set out. Sugar beets and mangels are grown to a limited extent and look well.

Tyringham (Edward H. Slater). — Potato bugs are proving troublesome. Indian corn is very backward; about three-fourths the crop is grown for the silo. The hay crop will be about 85 per cent as compared with former years, of good quality. More forage crops are being raised than usual, but are quite backward. Potatoes are not quite as good as in former years, owing to the dry weather. Apples are dropping quite badly; plums and grapes are looking well. Pastures are very dry. Rye, oats and barley are good, both as grain and forage crops.

Becket (Wm. H. Snow). — Potato bugs are doing some damage. The corn crop promises very well, and about three-fourths of it is grown for ensilage. There is a full hay crop of very good quality. More forage crops than usual are being grown and they are in good condition. Market-garden crops are fully average in yield and prices are fully as high as usual. Pasturage is in good condition. Rye, oats and barley are fully average crops. A few apple orchards have been set out, but it is reported that they have been destroyed by deer.

West Stockbridge (J. S. Moore). — Potato bugs and cabbage worms are doing damage. Indian corn is in fairly good condition; but little is grown for ensilage. The hay crop is less than last year in quantity and not of as good quality. Forage crops are little grown. Market-garden crops are in fairly good condition; no potatoes harvested as yet; prices about as usual. Apples are dropping

badly; pears abundant; no other fruit of any account. Pasturage is in very poor condition, owing to hot, dry weather. Oats are looking well; rye and barley but little grown. No apple orchards have been set out.

Washington (E. H. Eames). — Indian corn is two or three weeks late; about half the crop is grown for ensilage. Hay is about half a crop. Forage crops are in good condition, with about the usual amount grown. Potatoes bid fair to give a good crop; market-garden crops are little grown. Apples, pears and plums promise well. Pastures are looking well. Oats are a very good crop. No new apple orchards have been set out.

Lenox (Horatio H. Sears). — Potato bugs are doing some damage. Indian corn is in good condition, with from 20 to 25 per cent of the crop grown for ensilage. The hay crop is about two-thirds the normal in quantity and of good quality. Market-garden crops in general are good; potatoes harvested a poor crop; prices good. The apple crop will probably be under the average. Pastures are in poor condition. Oats are not harvested, but promise only a light yield. The weather is very dry, probably the driest at this season for years.

Richmond (Timothy B. Salmon). — Potato bugs and elm-leaf beetles are doing some damage. Corn is very backward; one-fifth of the crop is grown for ensilage. The hay crop is smaller than usual in quantity, but of good quality. No more forage crops than usual are being grown, but they are in good condition. Market-garden crops are in good condition; very few potatoes harvested; prices above the average. The prospect is good for apples, pears and plums; few peaches or quinces; some grapes. Pasturage is short. Rye, oats and barley are about average crops. No new apple orchards have been set out.

Hinsdale (A. N. Warren). — Potato bugs are doing some damage. Indian corn is of good color, but small growth. The hay crop is three-fourths of a full crop of good quality. Forage crops are late and small owing to drought. Market-garden crops are light of yield; prices higher than usual. Apples are not over half a crop, also pears; plums are a little better. Pasturage is short and dry and our farmers are feeding grain to keep up the flow of milk. Oats are a fair crop. No new apple orchards have been set out.

Cheshire (L. J. Northup). — Indian corn bids fair for a normal crop; probably one-fourth of the crop will be used for ensilage. The hay crop is about ninety per cent of a normal crop. Forage crops are in good condition; acreage about the same as usual. The drought hurt gardens to some extent and prices for market-garden crops keep up. Apples are not more than half a crop. Pastures are very dry. There are no new apple orchards set out.

FRANKLIN COUNTY.

Charlemont (J. M. J. Legate). — There is little damage from insects, except the potato bug. Corn is rather late, but looks well; one-half the crop is grown for ensilage. The hay crop is below the average for quantity, but of very good quality. No more forage crops than usual are being grown and they are looking very well. Potatoes look finely, but have not yet been harvested. There will be a very light crop of all fruits; apples have dropped very badly. Pasturage is in good condition. Rye, oats and barley are little raised. No apple orchards have been set out to my knowledge.

Colrain (W. H. Davenport). — Potato bugs are about as plentiful as usual. Indian corn is doing well, being largely planted late for ensilage. The hay crop was medium in quantity and of good quality. Considerable rape and millet have been sown, but have suffered from drought. Few market-garden crops are grown; potatoes have not been dug, but are looking well. Apples appear a little below last year, or about an average. Pasturage is rather short now from dry weather. Oats are raised for forage and are in fair condition. A large number of apple trees were set this spring, but only a few in new plot, being mostly enlargements.

Buckland (Eugene D. Griswold). — Potato bugs are doing some damage. Indian corn is looking fairly well, though it is a little late and begins to show the effects of dry weather; nearly one-half the crop is grown for ensilage. Forage crops are very little raised, but are looking well. Potatoes are looking well, though none have been harvested. Apples are dropping badly; other fruits looking well. Pasturage is in good condition, though it begins to look a little dry. Rye, oats and barley are about average, but are little raised for grain. There have been from 10 to 15 acres of new apple orchards set out.

Ashfield (Albert Howes). — Potato bugs are doing some damage. Corn is not up to the average in condition; two-thirds of the crop is grown for ensilage. The hay crop is a little below the average in quantity, with practically no clover. About the usual amount of forage crops is grown and they are looking well. Potatoes are very uneven, though the recent rains have improved them. Pasturage is short and in need of rain. Apples, pears and peaches will give short crops; plums promise well. Nearly every farmer has set some apple trees the past year, some of them several hundred.

Whately (C. L. Crafts). — Potato bugs are doing a great deal of damage. Indian corn has come on rapidly and is normal; probably two-thirds of the crop is used for ensilage. The hay crop was of good quality, but hardly more than half a crop in quantity. Forage crops are little raised. Dry weather ruined all market-garden

crops. There will be a very good crop of apples and many peaches; grape vines are loaded and there are some pears. The extreme drought makes pastures very poor. Rye, oats and barley are about normal crops. I have set 300 apple trees, but very few others have set any.

Sunderland (George P. Smith). — Potato bugs are doing some damage. Indian corn is in good condition, though some spots are injured by drought; about one-half the crop is grown for the silo. There was about a two-thirds crop of Number 1 hay. Market-garden crops are late and small; yield of potatoes very light, but prices good. There will be a small yield of apples, pears, plums and grapes. Feed is very short in the pastures, owing to drought. Rye, oats and barley are little grown. No new apple orchards have been set out. Onion sets are being harvested; yield 100 to 300 bushels per acre; price $1 per bushel. Tobacco promises well, and leaves are being picked on the shade-grown.

Northfield (T. R. Callender). — Corn is small and badly rolled, but probably saved by the rain of the 24th; more than one-third of the crop is grown for the silo. The hay crop was about one-third of the normal and much of it dead before harvesting. A considerable amount of oats are raised for fodder. Early potatoes are a complete failure: pease also; prices high for all truck. Apples are dropping badly. Pastures are badly burned. Oats for forage are a fair crop. No new apple orchards have been set out.

Wendell (N. D. Plumb). — Potato bugs and tent caterpillars are doing damage. Indian corn is very backward on account of drought: about one-fourth of the crop is grown for the silo. The hay crop is normal in quantity and quality. More than the usual amount of forage crops is being raised, but they are making slow growth. Early potatoes are a failure and later ones will be about half a normal crop. Apples are falling from the trees and the prospect is for not more than half a crop. Pasturage is in poor condition. Rye, oats and barley are half crops. No new apple orchards have been planted. Wells and streams are dry and many are carting water for stock watering and household purposes.

HAMPSHIRE COUNTY.

Ware (J. H. Fletcher). — Potato bugs are doing some damage. Corn is somewhat late, but looking very well: most of it is grown for grain. Hay was not much more than half a crop on some farms. More forage crops are raised than last year and they are looking very well. Market-garden crops are not in very good condition. The prospect for apples is not very good; there will be some peaches. Pastures are not in very good condition. I do not think any new orchards have been set out.

Belchertown (Almon L. Pratt). — Cut worms have done considerable damage. Indian corn is small but of good color; half the crop is grown for ensilage. The hay crop is about 60 per cent of the normal in quantity and of good quality. More forage crops than usual are being raised, but they are in poor condition. Market-garden crops are in poor condition and there are but few potatoes to dig; prices are high. There will be about half a normal crop of fruit. Pasturage is in very poor condition. Rye, oats and barley are about three-fourths crops. Very few apple trees have been set out.

Amherst (Wm. P. Brooks). — Potato bugs and elm-leaf beetles are doing damage. Corn is in unusually fine and forward condition, except on very light soils, where it has suffered badly from drought. The hay crop was about two-thirds of the normal; well-cured, but with very little clover. More forage crops than usual have been put in, but they are in very poor condition, owing to drought. Potatoes, except on the best of soils, have suffered greatly from drought, as have other market-garden crops, except squashes, cucumbers and tomatoes. Fruit will apparently be small, but of fair quantity. Pastures are very short; in many places the sod is brown and there is no feed.

Hadley (L. W. West). — Potato bugs are doing some damage. Corn looks well, being mostly a week ahead of the normal; about one-fifth of the crop is grown for ensilage. From one-half to two-thirds of a crop of hay was secured in good condition. Rather less than the usual amount of forage crops are being raised and they are in rather poor condition owing to dry weather. Market-garden crops are below the average; potatoes poor and few harvested; price higher than usual. Apples small and dropping badly; plums fair; grapes winter-killed. Pasturage is short and dry. Rye is 10 per cent and oats 20 per cent below the normal. One apple orchard of 10 acres has been set out. Tobacco and onions are very uneven.

Southampton (C. B. Lyman). — Potato bugs are doing some damage. Indian corn is late, but is looking fairly well; about 20 per cent of the crop is grown for ensilage. The hay crop was about three-fourths of the normal, and of very good quality. About the usual amount of forage crops is being grown and they are in good condition. Potatoes are a very light crop. Apples, pears, peaches and plums will give light yields. Pastures are dry and brown. Rye, oats and barley are about normal. No new apple orchards have been set out.

Westhampton (Levi Burt). — Cattle flies and potato bugs are troublesome. Indian corn is looking finely and three-fourths of the crop will be put into the silo. Hay was about a three-fourths crop of fine quality. Not as many forage crops as usual are being grown

and they are in good condition. Market-garden crops are not grown here; potatoes look finely; none harvested as yet. Apples will be half a crop; small fruits about average. Pastures are short and dry. Oats grown for forage are fair crops. About 15 acres of new apple orchards have been set out.

Chesterfield (Horatio Bisbee). — Potato bugs are doing damage and cut worms have damaged corn. Corn is looking very well; not over one-fourth of the crop is raised for ensilage. The hay crop is below the average in quantity and quality. No more forage crops than usual are being raised and they are backward. The prospect is poor for potatoes; none harvested as yet. Prospect for apples rather poor; other fruits not much raised. Pastures are short. Rye, oats and barley promise fairly well. Not more than one or two acres of apple orchard have been set out.

Plainfield (C. A. Williams). — Potato bugs are doing the most damage of any insect. Corn is looking well, considering the dry weather; more than half the crop is grown for ensilage. The quantity of the hay crop is below average, but the quality is good. More forage crops than usual have been sown, but they are backward. Potatoes are not very promising. Apples and pears are dropping badly; other fruits about average. Pastures are very dry and feed short. There will not be average crops of oats or barley. Some have set a few apple trees but not many this year.

HAMPDEN COUNTY.

Tolland (Eugene M. Moore). — Potato bugs and cut worms have done damage. Indian corn is backward owing to the dry weather; about half the crop is grown for ensilage. Hay was of fair quality but a light crop. There is an increased acreage of forage crops, mostly corn and oats. Apples are dropping badly and will give about a one-fourth crop. Pasturage is in poor condition, owing to drought. Rye, oats and barley are about three-fourths of an average crop. About 10 acres of new apple orchards have been set out.

Russell (E. D. Parks). — Potato bugs are doing damage. Corn is improving in condition and will be an average crop; about one-fourth of it is grown for the silo. Hay was of good quality and a little below the average in yield. About the usual amount of forage crops are being raised, but they are backward. Market-garden crops are rather late and below the average. Fruit will be below the normal in yield. Pastures are holding out fairly well. Rye, oats and barley are but little raised and are used for forage. Several apple orchards, about 2,500 trees, have been set out.

West Springfield (T. A. Rogers). — Potato bugs are doing damage. Indian corn is looking well; about 25 per cent of the crop is grown for ensilage. Quantity of the hay crop under normal and

quality good. More forage crops are raised each year and all have been used this year as soon as grown. All market-garden crops have suffered from drought; early potatoes on dry land are a poor crop. Apples have dropped badly; pears average: peaches good; plums a failure; grapes good. Pasturage was never so poor, as it got a poor start in May and has been short all summer. Rye and oats have done well. A few small blocks of apple trees have been set out, but nothing of importance.

Agawam (J. G. Burt). — Early corn looks pretty well, but late fields are drying up; half the crop is grown for ensilage. The quantity of the hay crop was light and the quality good. About the same amount of forage crops as usual is being grown and they are in rather poor condition. Potatoes are a light crop and high in price. The prospect for fruits is good, if we have rain. Pastures are very short. Rye and oats are about normal. No new apple orchards have been set out.

Hampden (John N. Isham). — Squash vine borers are doing damage. Corn is in fine growing condition; about 20 per cent of the crop is used for ensilage. The hay crop was about 75 per cent of the normal; quality good except that some was overripe. About the usual amount of forage crops is being raised and they are in good condition. The condition of garden crops is generally good; yield and price fully equal to former years. Apples promise only a fair crop: peaches looking extra well; pears, plums and grapes normal. Pastures are very short and milch cows have to be fed to keep up the flow of milk. Rye was not a heavy crop: oats for forage are a good average crop. Several small orchards were started, in all for the two years mentioned we estimate 15 acres. Some fields of early potatoes gave but half a crop: late potatoes are looking better since the rains.

Monson (F. D. Rogers). — Flies on cattle are very plenty; potato bugs are easily kept in check by spraying. Indian corn is rather late, but is looking finely; nearly half the crop goes into the silo. The hay crop was considerably lighter than last year, but was of good quality. Early potatoes are a poor crop. The usual amount of corn and millet is being raised for forage and they are looking well. Apples will be a light crop; pears, plums and grapes promise well. Pasturage is in very poor condition. Oats for forage have done well. Not many apple trees have been set out this year.

Palmer (O. P. Allen). — The elm-leaf beetle is doing damage. Indian corn is now in fair condition; a limited quantity is used for ensilage. The hay crop was about two-thirds of a normal crop. No more forage crops than usual are being raised and they are below the normal in condition. Market-garden crops are in fair condition, considering the dry weather. The prospect for fruit is

not as good as was anticipated, the dry weather causing quantities to drop. Pastures are suffering from want of rain. The yields of rye, oats and barley are smaller than usual. No new apple orchards have been set out.

WORCESTER COUNTY.

Charlton (Loren E. Stevens). — Potato bugs are unusually plentiful. Corn is not looking well generally and a large amount is grown for ensilage. The hay crop was of good quality, but about two-thirds the usual quantity. Forage crops are backward on account of dry weather. No potatoes have been dug. Apples will be half a crop; other fruits average. Pastures are dried up. Rye, oats and barley are not as good as usual. No new apple orchards have been set out.

Warren (W. E. Patrick). — Potato bugs and elm-leaf beetles are doing damage. Indian corn is looking well considering the dry weather; possibly two per cent of the crop is grown for ensilage. Hay was not over a two-thirds crop and generally of poor quality. Not as much has been done with forage crops as usual, as the weather has been too dry to germinate them. Potatoes are a very poor crop. Grapes will give a large crop, but there will be very few apples. Pastures are all dried up, with no feed whatever, and many are feeding at the barn. Rye was a fairly good crop and oats are very good. No new apple orchards have been set out.

Brookfield (Frank E. Prouty). — The elm-leaf beetle is doing some damage. Corn is backward on account of the dry weather; not over one-fourth of the crop is grown for ensilage. Hay was not over a two-thirds crop, of good quality. More forage crops than usual were planted, but they are in poor condition on account of the dry weather. The dry weather has injured all market-garden crops. Fruit is dropping badly from lack of rain. Pasturage is in poor condition. Rye, oats and barley have all suffered from drought. From 5 to 10 acres of new apple orchards have been set out.

Oakham (Jesse Allen). — Potato bugs are doing damage. Indian corn is shortened by dry weather; about one-fourth of the crop is grown for ensilage. The hay crop was about two-thirds of the normal in quantity and of excellent quality. More forage crops than usual have been put in, but they have been injured by drought. There will be very little fruit of any kind. Cattle can get very little feed in the pastures. Early sown small grains are in very good condition; late sown about half a crop. No new apple orchards have been set out.

Dana (Lyman Randall). — Potato bugs are plenty and doing considerable damage. Indian corn is backward and uneven; about

one-half the crop is grown for ensilage. Hay is not over two-thirds of a normal crop and the quality is good. More forage crops than usual were planted, but owing to the drought they have not come up well. All market-garden crops are poor, both in yield and quality; prices are high. The prospect for all fruits is poor; they did not set well and the dry weather has caused them to drop badly. Pasturage is very short. Rye has done fairly well; oats and barley are small yields. There have been no new apple orchards set out.

Templeton (Lucien Gove). — Potato bugs, cabbage worms, elm leaf beetles and squash bugs are doing damage. Corn is very backward and will need an unusually favorable season to mature; three-fourths of the crop is grown for ensilage. Hay was not over a three-fourths crop and the quality suffered from overripening. More than the usual amount of forage crops was put in, but they have suffered from drought. Potatoes are a very poor crop; market-garden crops are poor and prices high. Apples promise a very light crop; pears below average; plums light; grapes fair. Pastures are in very poor condition. Rye, oats and barley are all below the average as grain forage crops. No new apple orchards have been set out.

Royalston (C. A. Stimson). — Potato bugs are doing some damage. Indian corn is small; two-thirds of the crop is grown for the silo. Hay was a two-thirds crop of fine quality. No more forage crops than usual are being grown. Market-garden crops are backward from lack of rain; no potatoes harvested. There will be an average crop of fruit. Pasturage is dried up. Drought has cut rye, oats and barley short as grain and forage crops. No new apple orchards have been set out.

Fitchburg (Dr. Jabez Fisher). — There is little damage from insects. The hay crop was 60 per cent of the normal in quantity and of fair quality. Forage crops are failures for want of rain. Apples 30 per cent of a full crop; pears 40; plums 50; grapes 85; quality 100, little or no fungous trouble. Pasturage is almost entirely dried up. Not much orchard planting is done except in a small way.

Harvard (John S. Preston). — Cut worms have done a great deal of damage to tomatoes, cucumbers and summer squash. All crops are very backward owing to dry weather. Corn has begun curling and potatoes have suffered severely from drought. All berries and small fruits are scarce and high. The first planting pease yielded half a crop and the next nothing. Hay was a fair crop. Cows are scarce and high and the price of milk has been low all summer; many are feeding at the barn. One field has been prepared for setting apple trees, but they have not been put in as yet.

Sterling (Henry S. Sawyer). — Potato bugs are doing damage.

Corn planted early is looking well; about half the crop is grown for ensilage. There was about a normal hay crop of good quality. An average amount of forage crops has been put in but they are making slow growth. Market-garden crops are nearly ruined by the drought. Apples, pears, plums and grapes are looking well. There is but little good feed in the pastures. Rye, oats and barley are scarcely grown at all for grain. Perhaps three acres of apple orchard have been set out. No potatoes have been harvested as yet.

Northboro (John K. Mills). — Corn is looking fairly well; fully half the crop is grown for ensilage. On low ground hay has been very heavy and very light on the upland; quality good. Forage crops are doing well since the rain. Market-garden crops have been poor, owing to drought, but prices have been good. There will be a good crop of apples and pears; plums, quinces and grapes small crops. Pasturage is in very poor condition. Rye, oats and barley are rather light crops.

Auburn (Wm. Gilbert). — Black squash bugs are doing much damage. Indian corn is looking well, though there are an unusual number of missing hills; about 75 per cent of the crop is grown for ensilage. Hay is of good quality, but only about a three-fourths crop. More millet than usual has been sown and it promises a good crop. Early potatoes are a failure, although the price per bushel is good. Apples, pears and plums are light crops. Pastures have suffered from the hot, dry weather. Oats are only about 90 per cent of a crop. No new orchards have been set out.

Mendon (J. J. Nutter). — Potato bugs, squash bugs and elm-leaf beetles are doing damage. On moist ground corn looks very well; but a small proportion of the crop is grown for ensilage. Hay is about a two-thirds crop of good quality. There is no increase in the amount of forage crops grown. Market-garden crops are not as good as usual; not many potatoes have been harvested. Grapes look well; apples half a crop; peaches and pears look very well. Pasturage is in poor condition. Rye, oats and barley look very well as forage crops. No new apple orchards have been set out.

MIDDLESEX COUNTY.

Hopkinton (W. V. Thompson). — Squash bugs are doing damage. Indian corn looks fairly well, considering the drought; practically all the crop is grown for ensilage. Hay is about a two-thirds crop of good quality. More forage crops than usual were put in, but they have not germinated because of the drought. Market-garden crops are not growing, just drying up. There will be few apples; pears are a fair crop, also peaches and grapes. Pastures are dry. Oats for forage have been good where sown early. There has not been much increase in the acreage of apple orchards.

Marlborough (E. D. Howe). — Potato bugs and elm-leaf beetles are doing damage. Early planted corn is in fair condition; 50 per cent of the crop goes into the silo. The hay crop was 60 per cent of the normal in quantity and 95 per cent in quality. More forage crops than usual were put in, but are not in very promising condition and need rain. All vegetables are short crops; potatoes about half the usual yield; and retail for 65 cents a peck. Apples promise 60 per cent of a full crop; pears 75; peaches 75; plums 50; quinces 90; grapes 100. Pasturage is all dried up. Rye, oats and barley are about 90 per cent of the normal as forage crops. One man has set out 1,000 apple trees.

Stow (Geo. W. Bradley). — The fall web worm is just beginning to work. Corn is very backward and is mostly grown for ensilage. The hay crop was about two-thirds of the normal in quantity and the quality was good for early cut. A good deal of millet has been sown, but it needs rain badly. Some market-garden crops were very nearly failures. All fruits are dropping badly and small fruits are drying up. Pastures have not been in such poor condition for thirty years. Rye, oats and barley will not average more than two-thirds crops.

Littleton (Geo. W. Sanderson). — Gypsy and brown-tail moths have done damage. Indian corn is in poor condition; a large proportion of the crop goes into the silo. The hay crop was not up to the average in quantity and quality. More forage crops than usual were put in, but dry weather has retarded growth. Market-garden crops were blighted by dry weather. The prospect is fair for fruits. Pasturage is dry. Rye, oats and barley are checked by the dry weather. Fifteen acres at least of new apple orchard have been set out in this immediate vicinity.

Dunstable (A. J. Gilson). — The gypsy moth is causing the most anxiety of any insect at the present time. Corn is very small and does not promise improvement; those who have silos will be likely to put their entire crop into them. The hay crop was considerably below the normal. More forage crops are planted than usual and their condition is very poor. Potatoes and all garden crops are nearly ruined by the drought. The prospect is that there will be a very light crop of all kinds of fruit. Pastures are badly burned up. Rye and oats are below the normal for grain and worth but little for forage. No new orchards have been set out.

Chelmsford (W. B. Bullock). — The brown-tail and gypsy moths have done a great deal of damage. Corn is in need of rain; about three-fourths of the crop is grown for ensilage. The hay crop was below the average in quantity, but of good quality. The usual amount of forage crops has been put in and they need rain. Garden crops are poor and high in price. Potatoes are looking well. There

will be a light crop of apples, pears, peaches and plums. Pasturage is all drying up. Rye, oats and barley are light crops. There have been no large apple orchards planted this year.

Billerica (E. F. Dickinson). — Indian corn is in fair condition though somewhat injured by drought; two-thirds of the crop is grown for ensilage. The hay crop was about two-thirds of the normal, but of excellent quality. Extreme drought has discouraged the planting of late crops for forage. Potatoes have felt the drought seriously and a light crop is anticipated. Apples are half a crop; pears two-thirds; peaches good; plums light; quinces fair; and grapes good. Pasturage is in very poor condition. Rye was a good crop; oats and barley below the average. No entire orchards were set out, but many trees here and there.

Concord (Wm. H. Hunt). — Elm-leaf beetles, brown-tail and gypsy moths have done damage. Indian corn stands up fairly well but needs rain badly. The hay crop suffered severely from drought on light soil. About the usual amount of forage crops is being sown. Potatoes and early truck have suffered from dry weather, but prices are good. Winter apples will be a light crop; pears fair; other fruits about average. Pastures have suffered severely from the dry weather. Acreage of rye, oats and barley average, yield rather below average. A few small orchards have been set out, but the total amount would be only a few acres.

Winchester (S. S. Symmes). — Lice on cucumbers and cabbages are doing damage. Indian corn is not raised here. Hay was less than half a crop and of poor quality. Forage crops will not grow because of drought. Potatoes are very small and all sprouted for new growth; prices are high on all market-garden crops. Apples and pears are dropping fast; peaches small and withered. Pasturage is entirely dried up and cows are being fed at the barn. Rye is all cut and the straw is very small and short. Probably ten acres of apple orchard have been set out.

Newton (G. L. Marcy). — Gypsy moths are doing damage. Corn is in good condition, most of it being raised for ensilage. The hay crop was half a normal crop in quantity and of poor quality. Millet is sown for forage and is slow to start on account of the drought. Fruit mostly promises well, though there has been some damage from hail. Rye, oats and barley are below average crops. No new apple orchards have been set out. Some fowls and horses were lost on account of hot weather.

ESSEX COUNTY.

Salisbury (Wesley Pettengill). — Potato bugs, gypsy moths and elm-leaf beetles are doing some damage. Corn is looking finely with every prospect of a good crop. Hay was about a three-fourths

crop of good quality. The weather has been too dry for market-garden crops and potatoes, and prices are higher than usual. There will not be a large crop of apples, many trees not bearing any; pears, peaches and plums good. Pasturage is all dried up on high ground and we have to feed at the barn. Rye, oats and barley were fairly good as forage crops. No new apple orchards of any size have been set out. Squashes are looking well.

Amesbury (F. W. Sargent). — There are very few insects at present, squash bugs being noticeably scarce. Indian corn is below the normal in condition; 20 per cent of the crop is grown for ensilage. The hay crop was of good quality and the tonnage was about two-thirds of the normal. Forage crops have suffered from drought at sowing time. Market-garden crops are in poor condition, with no rain for six weeks; potatoes are not bottoming. All fruits are light in yield. Pastures are dry and burned. Rye, oats and barley are sown only for forage and are not in favorable condition. No new apple orchards of any amount have been set out.

Methuen (Frederick A. Russell). — Brown-tail and gypsy moths are depositing the eggs in large quantities. Indian corn is very poor especially on light land; a large proportion is grown for ensilage. Hay was about a two-thirds crop and much of it was badly dried before being cut. Fewer forage crops than usual were put in and they are in poor condition. Market-garden crops are very light and poor; potatoes extremely poor; prices high. There will be very few apples; pears plenty but small; peaches and plums plenty; few quinces, grapes and cranberries. Pasturage was never in poorer condition. Rye, oats and barley are very light crops. In 1910 one apple orchard of thirty acres was set out, also several smaller lots.

Hamilton (George R. Dodge). — Indian corn has come along finely but is now showing the effects of drought; 50 per cent of the crop is grown for ensilage. Hay lacks 33 per cent of a full crop but is of good quality. About the usual acreage of forage crops was put in, but the yield will fall short 25 per cent. Market-garden crops are short and prices high. Apples, pears, peaches and plums will be short crops, having dropped heavily. Upland pastures are dried up and lowlands are yielding a fair amount of feed. Rye, oats and barley, as forage crops, have given two-thirds yields. One orchard of two and one-half acres was set in 1910.

Topsfield (B. P. Pike). — Gypsy moths are doing damage. Indian corn is late and uneven; 75 per cent of the crop goes into the silo. The hay crop was 60 per cent of the normal in yield and less than average in quality. Forage crops are about the same as usual in acreage and in poor condition. Early potatoes are a very poor crop; other market-garden crops short and prices high. Apples will be half a crop; pears fair; peaches short; grapes good. The

condition of pasturage is as bad as it can be. Rye, oats and barley are very short crops. No new apple orchards have been set out.

Danvers (C. H. Preston). — Corn is very uneven, but some fields are good. The hay crop was very light and much of it overripe when cut. More forage crops than usual have been put in, but they are rather poor. Market-garden crops average poor in condition, but prices are very good. There will be some apples and pears; few peaches; grapes good. Rye, oats and barley are good crops as forage crops. I know of no new apple orchards.

NORFOLK COUNTY.

Cohasset (Ellery C. Bates). — Only a small amount of corn is raised and none for ensilage, and it is in fair condition. Hay was less than half a normal crop of good quality. There is a small crop of early potatoes and prices are higher than usual. The prospect for fruit of all kinds is fair. No new apple orchards have been set out. All crops are suffering from want of rain.

Randolph (Rufus A. Thayer). — Potato bugs are doing some damage. Indian corn is growing very slowly; two-thirds of the crop is used for ensilage. Hay was about half a crop on high land and a good average on low land. About the usual amount of forage crops was put in and they need rain very much. Market-garden crops are very light, but prices are good. Apples are dropping badly; pears promise a fair crop; very few peaches. Pasturage is very dry and poor. No new apple orchards have been set out.

Canton (E. V. Kinsley). — Corn is in full average condition, a trifle late but growing fast; 75 per cent of the crop is grown for ensilage or fodder. The hay crop was about 65 per cent of the normal, but of the best quality. The acreage of forage crops is increased about a third and they are in very bad condition on account of drought. Potatoes promise a very light crop; market-garden crops short and prices very high. Apples, pears and grapes look very finely; other fruits not grown. Pasturage is very short and dry. Rye is a very good crop; oats and barley two-thirds yields. No new orchards have been set out.

Franklin (C. M. Allen). — Brown tail moth and elm leaf beetles are doing damage. Indian corn is in very good condition; half the crop is used for ensilage. The hay crop was 75 per cent of the normal in yield and 90 per cent in quality. Market-garden crops have been very much injured by drought. Apples promise a poor crop; pears good; peaches light. Pastures are dried up. Rye, oats and barley are 90 per cent of full crops. Nearly all crops have been damaged by heat and drought.

Foxborough (William E. Perkins). — Corn on low ground is looking well, but the average is feeling the drought; about two-thirds

of the crop is grown for ensilage. More than the usual amount of forage crops has been put in, but they are pretty well dried up. Market-garden crops all suffered from heat and dry weather and prices have been high. Apples, pears, plums and grapes promise fine yields. Pasturage is dry. Rye and the first sowing of oats did well. Farmers are feeding the dry hay from their mows that they do not usually touch until winter.

BRISTOL COUNTY.

Mansfield (E. Jasper Fisher). — Elm-leaf beetles, potato bugs and currant worms are doing some damage. Corn is looking fairly well; about 15 per cent of the crop is grown for ensilage. Hay was not much more than half a crop, but was of good quality. There is no increase in the acreage of forage crops and they are in poor condition. Market-garden crops are light in yield, with prices higher than usual. The prospect is fairly good for apples, pears, grapes and cranberries. Pastures are pretty well dried up. Rye and oats were smaller crops than usual. No new apple orchards have been set out.

Seekonk (John W. Peck). — Potato bugs and the giant tomato caterpillar are doing some damage. The corn crop is 40 per cent below the normal in condition; three-fourths of the crop goes into the silo. The first crop of hay was nearly normal, low lands being extremely good. There is about the usual acreage of forage crops, but they are in poor condition because of drought. Early market-garden crops were good, later ones very badly affected by heat and lack of rain. All fruits started well but need plentiful rains to mature. Pasturage is in very poor condition on old pastures. Rye, oats and barley are about normal for grain and forage. Very few apple trees have been set out this spring.

Dighton (Howard C. Briggs). — Cut worms have done considerable damage. Indian corn is in poor condition; 25 per cent of the crop goes into the silo. The hay crop is average in quantity and quality. More forage crops than usual have been sown, but they are in poor condition. Market-garden crops have made poor yields, but have brought fair prices; potatoes are half a crop. Strawberries were a good crop, with fair prices. Fruit has dropped badly, half crops, except for grapes. Pasturage is in very poor condition. Rye, oats and barley are average crops. Perhaps 20 acres of new apple orchard have been set out.

Swansea (F. G. Arnold). — Elm-leaf beetles and a small number of brown-tail and gypsy moths have appeared here. Corn is looking well, buts needs rain: there are only four silos in use in town. The hay crop was not over two-thirds of the normal in quantity, but of fine quality. Forage crops are in good condition. Potatoes suffered

from dry weather and those harvested are small; price higher than usual; cabbage scarce and high. The prospect for all fruits is very light, much dropping because of dry weather. Pastures are very dry and many farmers are feeding from the hay mow.

Westport (Albert S. Sherman). — Tomato worms are doing much damage at present. Indian corn is very backward; 90 per cent of the crop is allowed to ripen for grain. The hay crop was very light, but of good quality. Forage crops are very small on account of drought and in poor condition. Market-garden crops are poor; potatoes small and yield a light crop; prices good. Trees are loaded with apples and pears; grape vines hang full; other fruits little grown. There is no feed for cattle in pastures except on low land, and not much there. Rye, oats and barley are fair crops. No new orchards have been set out; spraying is almost universal.

Acushnet (M. S. Douglas). — Elm-leaf beetles are very numerous. Dry weather has caused a very short crop of Indian corn. Hay was two-thirds of a normal crop of fair quality. It has been too dry to plant forage crops. Potatoes are half a crop and prices are very high. Early apples are a fair crop; few pears; peaches and plums fair; grapes very good. Pasturage is in very poor condition indeed. Rye was a good crop and oats half a crop. Most farmers have put out a few apple trees to take the place of old ones; no new large orchards. Farmers are feeding hay from the barn and the milk supply is getting very short.

PLYMOUTH COUNTY.

Norwell (Henry A. Turner). — Potato bugs and currant worms are doing damage. Corn looks well; very little grown for ensilage. Hay was about a two-thirds crop of good quality. Potatoes are feeling the dry weather and it looks like a short crop. Pastures are very dry and short. Very few apple trees have been set. Unless rain comes soon market-gardeners and others will suffer greatly.

Hanover (Harrison L. House). — Cut worms and striped squash bugs are doing damage. Indian corn is in fair condition, but suffering for want of rain; very little is raised for ensilage here. Hay is about a two-thirds crop of good quality. Forage crops are suffering for rain. Market-garden crops are backward, from one-half to two-thirds normal yields; potatoes will be a failure. The prospect is good for apples, pears and grapes; fair for peaches, plums, quinces and cranberries. Pastures are short on account of dry weather. Rye, oats and barley are little raised. No new apple orchards have been set out.

West Bridgewater (Clinton P. Howard). — Elm-leaf beetles are our worst insect pest. More than half the corn crop is used for

ensilage. The hay crop was about two-thirds of a normal crop and got in in good condition. The severe drought has prevented much growth of forage crops. Early market-garden crops are nearly a failure. Fruit, especially apples, is very plenty. Pasturage is all dried up.

Kingston (George L. Churchill). — Potato bugs are doing damage. Indian corn is in fair condition; half the crop will be used for ensilage. The hay crop is of poor quality and not over half a crop in yield. Forage crops are little raised and are in poor condition. Prices are good for market-garden crops; potatoes very poor; not half a crop. The prospect is very good for fruit. Pasturage is in very poor condition indeed. Rye, oats and barley are not raised to any extent. Not many apple trees have been set out.

Lakeville (Nathaniel G. Staples). — About the usual amount of Indian corn is grown and half of it is used for ensilage. The hay crop was from 15 to 25 per cent below the normal in yield; quality about as usual. No more forage crops than usual are being grown. Potatoes are poor in yield, one man planted four bushels of seed and harvested nine bushels of crop. The prospect is very good for all fruits except cranberries, which will be a short crop. Pasturage is all dried up. Rye was a fair crop; oats 15 to 25 per cent below the average. From 10 to 15 acres of new apple orchards have been set out.

Rochester (Geo. H. Randall). — Cut worms and potato bugs are doing damage. Corn is looking fairly well though many fields have suffered from dry weather; very little is grown for the silo. The hay crop is about two-thirds of the normal and of fair quality. Less than the usual acreage of forage crops was put in and they have not germinated well. Market-garden crops have made small yields and brought high prices. Apples are dropping; pears and peaches short; grapes and cranberries promising. Pastures are all dried up and stock is fed in the barns. Rye, oats and barley are average crops. Only a few apple trees have been set out.

BARNSTABLE COUNTY.

Falmouth (D. R. Wicks). — Corn worms are working on the corn ears. Indian corn has made a fine growth but the severe drought is telling on it. Hay was about half a crop of good quality where not too ripe. Forage crops are badly in need of rain. Garden crops are poor and prices high; potatoes are a failure on high land. Fall apples look very well; few pears or peaches; Japan plums and grapes a full crop; few winter apples; prospect poor for cranberries. Pasturage is all burned up on high land. Rye, oats and barley are short crops. Very little has been done in setting out

large fruits. We are too near salt water to have our apples keep well, though trees grow well.

Mashpee (W. F. Hammond). — Cut worms and cranberry-vine worms are doing damage. Corn is about an average crop; none raised for the silo. Hay is about half a crop of good quality. Forage crops are below the average in condition. Market-garden crops are below the average in yield, but above in price. There will be a one-third crop of apples, pears and grapes, and a two-thirds crop of cranberries. Pasturage is about average. Rye and oats are below the average both as grain and forage. About two acres of new apple orchard have been set out.

Barnstable (John Bursley). — Cranberry insects are doing damage. Corn is very small and rolling badly on light ground; none grown for ensilage. Hay was about two-thirds of a normal crop and of good quality when cut at the proper time. Less than the usual amount of forage crops have been put in; the ground is badly baked and it is difficult to plough. Potatoes and pease are one-fourth crops and prices are doubled. Grapes and plums look well; cranberries growing less each day; other fruits very light. Pasturage is entirely gone. Oats for forage were very good crops.

Dennis (Joshua Crowell). — Cranberry-vine worms are doing damage. Indian corn is in good condition; very little is grown for ensilage, but some for green fodder. Hay is a three-fourths crop of good quality. Forage crops are in good condition. Market-garden crops are not up to the average in yield, prices the same as usual. Apples and pears about half crops; grapes good; cranberries have suffered from hot, dry weather and the prospect is not as favorable as three weeks ago. Pasturage is very short, owing to drought. Some few apple trees have been set here and there, but no orchards.

Brewster (Thomas D. Sears). — Cranberry worms are doing much damage. Corn is looking well; very little is grown for ensilage. The hay crop was small compared with former years and the quality about as usual. Very few forage crops are being raised. On account of the dry weather market-garden crops are small compared with former years, especially potatoes, and the prices are high. There will be a small crop of apples, pears, cranberries and other fruit. Pasturage is very poor on account of dry weather. Rye, oats and barley are about average crops. Very few apple trees have been set out this year.

Wellfleet (E. S. Jacobs). — Potato bugs are doing damage. Very little Indian corn is grown here and there are no silos. Hay was a good crop above average quality. Forage crops are about the same as usual in acreage and in good condition. There will be very small yields of all kinds of market truck, especially potatoes. Ap-

ples, pears and peaches are below the average; quinces and grapes look well; cranberries are above the average, and will be a large crop. No new orchards have been set out.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — White grubs and potato bugs are doing damage. Indian corn is suffering from dry weather; only a small portion of the crop is grown for ensilage. Hay is about one-third of a normal crop, but of good quality. About the usual acreage of forage crops have been put in, but they are in poor condition. Market-garden crops are in very poor condition; prices high; prospect for potatoes very poor. The prospect for fruit is poor. Upland pastures very dry, a little feed in the swamps. Rye, oats and barley are much below the average.

NANTUCKET COUNTY.

Nantucket (H. G. Worth). — Cut worms and potato bugs are doing damage. Corn is looking finely; none grown for ensilage. Hay was about half a crop in quantity, but of good quality. Forage crops are more grown than usual, mostly corn, and in good condition. Market-garden crops have given good yields and brought good prices. The prospect for cranberries is fairly good; no other fruit raised. Pasturage is below the average in condition. Oats for forage are the only grain crop raised and are in very poor condition. There are no apples raised in this county.

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THE MORE IMPORTANT ROOT CROPS OF THE MARKET GARDEN.

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The following-named crops form the root crops of most importance to the market gardener, namely, beets, carrots, turnips, parsnips, radishes and onions.

Beets, Carrots and Turnips.

These crops are usually grown from two main sowings, the first for the summer market, when the crop is sold bunched, and the second for the winter market, when the crop is sold busheled. The soil for these crops should be rich and mellow, a well-manured, deep, sandy loam being ideal. It is very important, especially for beets, that the soil be free from all free acid. To make sure that any acid condition of the soil is corrected, a liberal amount of lime, wood ashes or basic slag meal should be applied. A large bulk of fresh stable manure is not desirable where these root crops are to be grown. It is by far preferable, for these crops, to apply a heavy coating of good stable manure the fall preceding, and plow it in. By spring it will have become quite thoroughly incorporated with the soil, and be in excellent condition to further a rapid growth of these root crops during April and May.

Turnips are not nearly as extensively grown for a bunch crop as beets and carrots. The demand is much less and the difficulty of raising a satisfactory crop much greater, due to insect injury, particularly the turnip root maggot. Beets lead in importance, with carrots second and turnips third. All of these crops should be planted early, about as soon as the land can be worked in the spring. Beets and carrots are usually planted in rows from 12 to 18 inches apart, and when the plants have reached a height of from 3 to 6 inches they should be thinned, to allow room for rapid growth and

full development. Sufficient thinning is a distinct factor in early development. Beets should be thinned to 6 inches and carrots to 3. The thinnings from the early beets can usually be sold as beet greens, at from 25 to 50 cents per bushel, and the amount received for them will ordinarily pay for the thinning and weeding. With carrots and turnips there is no such opportunity to get an early income before the roots are ready for market, although young turnips make splendid greens.

A fertile soil is essential to the best success with any of these crops, and without it quick growth and early maturity cannot be expected. In addition to a liberal application of stable manure, from 10 to 15 cords (20 to 30 tons), applied the fall previous to planting and plowed in, there should be applied 1,000 pounds of good quality lime and 1,000 pounds of high-grade commercial fertilizer, analyzing 3 per cent nitrogen, 8 per cent phosphoric acid and 10 per cent potash. This lime and fertilizer should be applied in the early spring. It is the best plan to apply the lime immediately after plowing, and deep harrow it, and put the fertilizer on after the disking, and work it in with the smoothing harrow.

The seed for these crops is sown with a seed drill, and put about one-fourth inch under the surface. It requires from 5 to 8 pounds of beet seed per acre, from 2 to 3 pounds of carrot seed and about 2 pounds of turnip seed. The rows of beets and carrots should be about 14 inches apart. The use of high quality seed is very essential to the largest returns, and it is wise to select the variety and strain of seed with considerable care.

The cultivation of these crops, if planted as above suggested, must consist almost entirely of scuffle or wheel hoeing and hand weeding. About three hoeings and one weeding, besides that done at the time of thinning, should properly take care of the crops.

The harvesting of beets usually begins by June 15, and a succession is desired throughout the season. In some markets bunched beets may be found in early winter, but as a rule the beets for winter use are sold by the bushel. To provide a succession of beets for bunching throughout the summer season more than one early planting is required. It is the custom to plant a very quick-growing variety for the first early, and Crosby's Egyptian is the standard variety for this planting. Following this planting by about two weeks, a little slower growing, rounder beet, is most popular. One of the leading varieties of this class is Detroit Dark Red. Some growers make still a third planting to supply bunched beets for their trade, and this occurs about May 15. The practice varies with the grower to a large degree.

For the Boston and Worcester markets beets are bunched four in a bunch and are sold by the dozen. The Providence market requires five in a bunch. This is varied somewhat according to the size of

the beets. Most gardeners clean up the first early beets by July 15, and plant the land to a succession crop, — beans, celery, cabbage or the like.

It is a common practice to start beets in the hotbed or greenhouse, and to set the plants in the field. In this way the grower gets his crop into an earlier market, where it usually commands a higher price, and he is able to clear his land for a second crop at an early date. For plants to set in the field beet seed is sown under glass about the last of February, in rows about 2 inches apart. The plants are grown to a height of from 4 to 6 inches, when they are ready to set in the field. This usually occurs about April 15, and the harvest commences about June 1.

The price received per dozen bunches for beets varies greatly. It is often $1 per dozen for the first in the market and frequently drops to 25 cents per dozen later in the season; the average is about 40 cents.

Winter beets are planted from June 20 to the middle of July. It is possible in a favorable season on rich land, to get a crop fit for storing when planted as late as August 1, but this is unusual. The seeding and tillage of the winter crop are practically the same as already described. Detroit Dark Red is a good variety for this crop. The beets should be harvested before freezing weather occurs, but moderate frosts do them no injury, provided the ground is well covered with foliage. It is the general practice to top the beets in the field, care being taken not to cut the beets so close that they will bleed. A yield of from 200 to 400 bushels per acre is usual. These roots are stored in a vegetable cellar or temporary pit, as seems most desirable. It is necessary that they be accessible during the winter months. The essential conditions in the root pit are, (1) temperature close to freezing, but always above; (2) damp atmosphere; (3) some ventilation; (4) good drainage. In order that the roots may keep well they must be cool when put away and not piled too deep.

Beets have very few serious insect enemies. The spinach leaf maggot often injures the leaves for a time, and there seems to be no remedy for this pest. Cut worms are likely to be injurious when the plants are small. The use of poison bait made of bran, molasses and arsenate of lead, scattered on the ground where the seedlings are coming up, is as effective as anything in controlling this pest; late fall plowing will also help. Beets should not be planted on land where scabby potatoes have been grown, for they will be affected by the scab and their appearance considerably injured.

The tillage, fertilization and general care of carrots are similar to those of beets. Carrots are never transplanted, and they are usually thinned to a less distance in the row, as already stated. The same manuring and fertilizing recommended for beets will give satis-

factory results with carrots. The harvesting season commences somewhat later, usually from July 1 to 10. The market uses bunched carrots throughout the summer season, although in late summer busheled carrots find a ready sale. The planting for the winter crop should not be delayed later than July 1 on the best of land, and June 1 is a safer date to insure a heavy yield. Winter carrots are harvested from October 1 to 15, and pitted or stored in a cellar, as are beets. The sale for carrots is usually large during the winter months, and they are one of the best of the winter revenue getters. The leading varieties of carrots are, for the first early bunching, Guerande or Ox-heart, a short, thick, early carrot; for second early, Chantenay, averaging about 5 inches long and of good size and shape for bunching; and Danvers Half Long, the standard main crop carrot. The price of bunched carrots will average about the same as for beets.

The production of good turnips for early marketing is a harder task than the production of the two previously considered crops. The cause is the pest already named, the root maggot, which seems to be practically uncontrollable. Freshly manured land is especially likely to produce maggoty turnips. For this reason most turnip growers do not apply manure directly previous to the growth of this crop, but depend upon the supply of accumulated plant food in the soil and commercial fertilizer. A fertilizer carrying about 3 per cent nitrogen, 10 per cent phosphoric acid and 10 per cent potash serves well for this crop. The application should be at least 1,000 pounds per acre. Tillage for this crop is the same as for beets and carrots. It is common to allow turnips somewhat more room than beets and carrots, 18 to 24 inches between rows being more suitable. With 24 inches between rows horse cultivation is feasible. For the early crop the flat turnip is often planted, although the round or egg turnip is the more popular. The standard turnips for bunching for the New England market are the White Egg and the White Rock. There is a marked difference in the strains of turnip seed found on the market. It is well to experiment in a small way with seed of a number of strains when selecting a turnip, for the difference in quality is often so distinct that one strain is worth much more than another. The turnip crop for storage and winter sale is sown from July 15 to August 10, and the round white turnip is the most popular, although the yellow turnip or rutabaga is popular in some of our markets. It is well to have a supply of each. The rutabaga should be sown not later than June 15 to make a crop. The storage for turnips is the same as for beets and carrots.

Root Storage.

The storage of the root crops for winter is an easy matter, the requisites of a suitable storage being a uniformly low temperature, ranging from 32° to 40° F., but not below freezing; ventilation

enough to prevent heating of the stored vegetables; and freedom from standing water, that is, good drainage. Root crops may be stored in any cellar where these conditions exist, in a regular vegetable pit or a temporary outdoor pit. It is essential to the best results that the roots be put away after the weather has become cool, usually toward the end of October.

When put into a cellar they are piled about 2 feet deep, and usually keep best when covered with sand, so that the air does not come in contact with them. Some growers do not consider this necessary, and where the air is moist it is not essential.

Vegetable pits are usually constructed on a sidehill, or dug down 6 to 8 feet deep, where the roots are kept considerably below the surface of the ground. On such a pit a double-pitch roof is usually constructed, with an opening covered by a 3 by 6 foot shutter, or something similar. When the cold weather of winter is at hand the roof and sides above ground are covered with meadow hay, or strong horse manure, to prevent freezing. The most convenient location for a vegetable pit is a sidehill where the vegetables can be carried in on a level with the floor of the pit. Where the storage is large a cart can be backed into the pit, saving much expensive labor.

A temporary outdoor pit can be easily made in the following manner. Select a well-drained piece of land, in a convenient location. Stake out the pit about 6 feet wide and the length desired, having the long way of the pit extend north and south. With a single plow loosen the surface soil to the depth of 6 to 8 inches, and shovel this out either side, dividing the amount about equally. Then pack the vegetables on the ground, having the base of the pile about 5 to 6 feet wide, and bring it to a ridge in the middle, at a height of about 2½ feet. Extend this pile as far as desired, and make parallel pits if necessary. When the vegetables are packed in the pits cover with 2 inches of straw or meadow hay, throw 2 to 3 inches of earth on them and allow them to thoroughly cool. As the weather grows colder add to the amount of covering, until there is 4 to 6 inches of earth over the pit. To allow ventilation pull a little of the straw up at the ridge, so that the earth does not cover completely, and so that any warm air may escape. When the earth covering has frozen into a crust, cover with straw or manure, so that the frost will not enter the pit. Instead of covering with earth at the south end use a liberal amount of straw as protection. When vegetables are wanted pull away the straw and take out what are wanted, breaking down the pit as the vegetables are removed. This outdoor pit, while temporary, gives very satisfactory results.

Parsnips.

Parsnips are a long-season root crop, which ought to be planted before the first of May, and will occupy the ground until late into the fall, sometimes until the following spring. There is a very limited sale for them bunched, but some market gardeners find such a sale profitable. Parsnips require a deep loam. A rich, sandy loam is ideal for their best development, and, as with the other root crops, the manuring of this crop should be done the season preceding its growth. The same fertilizer that has been recommended for the other root crops is suitable for this crop, and the same amount. Parsnip seed is sown with a seed drill, in rows 12 to 18 inches apart, and is usually sown quite thickly, for it is weak and requires some time to germinate. It is a common and proper pratice to sow some seed with the parsnips which will germinate quickly, and mark the rows so that it will be possible to go through the piece with a wheel hoe before the parsnip seed is up. Lettuce and radish seed are both suitable for this purpose. Hand weeding and thinning are required, and the plants should be left about 3 inches apart in the row.

Parsnips started early will sometimes be ready to sell bunched in July. About four or five are put in a bunch, and the price averages about 50 cents per dozen bunches. The usual time of harvesting is in September, October and November. During these months there is an increasing market demand, and those not sold directly from the field are taken up in November and put into a pit. The yield of parsnips per acre varies from 300 to 600 bushels. The ideal size is about 2½ inches across the crown and about 12 inches long. They should be smooth and white. It is necessary to wash them for some markets, while others take them unwashed. It is often possible to sell both washed and unwashed, the former bringing from 10 to 15 cents more per bushel than the latter. When parsnips are put into the pit it is necessary to pack them so that the roots remain straight; otherwise, when taken from the pit, many roots will be crooked, and will have to go as seconds.

The varieties of parsnips are few. The standards are Hollow Crown and Long Smooth; the former is the more popular, being somewhat larger for its length and not growing so long.

There are practically no diseases or insect pests that trouble the parsnip. Some crops will appear rusty, due to soil conditions, and rotation will usually remedy this trouble.

The greatest labor in the production of the parsnips is the digging. It is usually best to use a plow, and plow close to the row; then the parsnips can be pulled by hand, and the next row plowed out in the same way. Parsnips may be wintered over in the ground where grown, but this practice is hardly suitable for the market gardener.

It is better to have the crop where it can be readily put on the market during the winter. If left until spring the digging is likely to interfere with spring work and the land not be available for very early planting.

Radishes.

Radishes are in a class by themselves as the quickest and most easily grown of garden crops. They do well in a rich, light, sandy loam, but need to have a good supply of moisture to make a select round radish. This crop is usually planted as a companion crop, a filler among the slower growing, coarser crops, and requires little cultivation beyond that necessary to properly prepare the ground. Radishes can be readily grown to marketable size in three weeks from the time of planting, and make a sufficiently rapid growth to keep ahead of the weeds.

There are two principal types of the short-season radish offered by the seed trade. They are the round radish and the olive shaped. The round type is the more popular and Scarlet Globe is the standard market variety. As is the case with most vegetable crops there is a wide variation in the quality and uniformity of the crop raised from different strains of the same variety. It is very important to obtain high quality seed and no person can safely economize by buying cheap seed.

The demand for radishes is most brisk in the early spring, but a moderate sale can be found for them throughout the summer season. The market price varies from 5 cents per dozen bunches to 20 cents per dozen, with an average between 10 and 15 cents. Radishes can be raised at a good profit at 12 cents a dozen where labor can be obtained that will bunch them cheaply. The cost of bunching should not exceed 2 cents per dozen.

In order to have a constant supply of radishes successive sowings must be made throughout the season, at intervals of about a week. The best rule is to sow seed when the lot preceding has gotten above ground. The sowings are then somewhat regulated by weather conditions, which vary the rate of growth. For the Boston market radishes are bunched from 7 to 12 per bunch, and packed roots up in bushel boxes, averaging about sixty bunches per box. It is not good policy to follow one crop of radishes with another, but better practice to raise each crop on different ground.

The only serious pest of radishes is the root maggot, which does much damage in early spring. It is often the case that one or two sowings are complete failures because of this pest. There is comparatively little trouble from this insect later in the season. There is no remedy known.

There is some scale for a large white radish, among some of the

foreign trade, during the summer. The varieties usually grown are the Large White Globe and White Strasburg. There is little market for these radishes outside the big cities.

Onions.

While onions are not a root crop, properly speaking, they are treated somewhat similarly, and may well be considered in such an article as the present. As grown by market gardeners they are logically classed with the crops just considered, and are handled in a very similar manner. The market gardener finds a sale for onions when the size of a pencil, as bunched onions or rareripes. He also grows them for bushel onions, more often producing the ripe onions from sets than from seed. Sets are small onions, about the size of a marble, which are put into the ground the last of March or the first of April, and which give one of the first crops from the garden.

Growing onions from seed is most often practiced when they can be handled as a companion crop. One of the most profitable combinations is that of celery and onions. Celery seed is sown in rows 4 to 5 feet apart and three or four rows of onions are sown between. In order to make this cropping successful the land must be filled with plant food and plenty of moisture. The seed for both these crops is sown early in April, before the 15th if the ground can be made ready. The rows are spaced about 12 inches apart. Where late celery is so grown the rows must be farther apart. The onions from this seeding are ready to harvest in late August or early September, and the room given to celery when it is making its most rapid growth. It is often the custom to use onion sets instead of seed between the celery rows. The onions grown from sets are harvested in July.

The best soil for onions is a medium, heavy loam, well filled with humus. It is best to use a large amount of manure for the crop preceding the onions and not apply much fresh manure for this crop. A commercial fertilizer analyzing 4 per cent nitrogen, 8 per cent phosphoric acid and 10 per cent potash is suitable. The application should be 1,000 pounds to the acre. Growing transplanted onions has become a common practice among market gardeners. The advantages are earlier maturity and the possibility of producing long-season varieties of greater size and better quality than can be grown from seed in New England. Prizetaker is the variety most commonly so grown. The seed of this variety is sown about February 15, under glass, either in the greenhouse or hotbed. A single hotbed sash 3 by 6 feet should cover from 5,000 to 8,000 plants. About twenty sashes are required to grow plants enough for an acre. The labor in setting these plants is great, but market gardeners find this method of growing onions profitable. The plants are set in rows

12 to 15 inches apart, and from 3 to 4 inches apart in the row. Boys will often do the transplanting as well as men and at a less cost to the grower. A nimble-fingered boy should set 3,000 plants a day. The land must be in good tilth, moist and not too firm. The onion plants should be about pencil thickness to give the best results, although smaller plants are often used. For setting, the rows must be marked, and where boys do the setting it is well to mark the spacing in the row.

Growing onions from sets is a most common practice. Most of the onions grown for bunching are so started. Many growers plant large areas to sets and sell as bunched onions all that it will pay to handle in that way; the rest are left to mature. Onions are repeatedly grown on the same land with decided success, and seem to prove the exception to the rule of rotation. The standard varieties of onions grown by the market gardeners are Yellow Globe Danvers and Southport White Globe; for transplanting, Prizetaker. The Danvers is by far the most popular. The average yield of onions is about 500 bushels per acre, although it is not unusual to obtain as many as 800 to 1,000 bushels.

Onions are easily stored, the requisites being, (1) proper curing in the field; (2) even, dry temperature, between 35° and 40° F.; (3) good ventilation. One freezing will not seriously injure the crop after it is put into storage, but repeated freezings and thawings soon spoil it. If the crop is frozen, and is not allowed to thaw until sold, little damage will occur. The market gardener usually handles his crop in bushel boxes and does not attempt to hold many for the winter trade. The average market price for dry onions is about 60 cents per bushel, while the early crop often sells for $1.

The insect pests of onions are mainly two, the maggot and the thrip. The onion maggot hatches from an egg laid by a small fly near the base of the plant. The egg hatches in a few days and the maggot eats into the bulb, causing decay and spoiling the plant. There is little that can be done, and the injury is not usually so extensive as to destroy a large percentage of the crop. The onion thrip is a small insect, not noticeable except to the close observer, which eats the stalk of the onion. In a dry season it is likely to be quite injurious. About the only satisfactory remedy is overhead irrigation.

Onions are attacked by one disease which is quite injurious when once introduced. It is called onion smut, and lives in the soil from season to season. The best remedy is rotation. It has been found that an attachment to a seed sower whereby the seed and adjacent soil can be moistened by formalin will largely control the disease. Dr. George E. Stone of the Massachusetts Agricultural Experiment Station has developed this treatment.

SERIES OF 1911. VOL. 24. NO. 4.

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MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF AUGUST, 1911.

GROWING BEANS, CORN, TOMATOES, LETTUCE AND SPINACH.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary.*

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

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The State Board of Publication.

Crop Report for the Month of August, 1911.

Office of State Board of Agriculture,
Boston, Mass., Aug. 1, 1911.

The issue for the present month, August crop report, contains the concluding article of our series on vegetable crops. In it are treated beans, corn, tomatoes, lettuce and spinach. This completes all the important crops of the market garden, and we shall presently collect these articles into a special bulletin, Bulletin No. 5 of our series of bulletins on Massachusetts agriculture. The author of the present article, Mr. Henry M. Howard of West Newton, has furnished us with several practical and valuable articles on market-garden crops, and is a thoroughly practical vegetable grower.

Progress of the Season.

The Crop Reporting Board of the Bureau of Statistics of the United States Department of Agriculture, in Crop Reporter for July, 1911, give their estimates as to acreage and condition of the principal farm crops of the country in the following table: —

Crop.	Condition August 1 (Per Cent).			Condition July 1, 1911 (Per Cent).	Acreage, 1911.	
	1911.	1910.	Ten-Year Average.		Per Cent of 1910.	Acres.
Corn,	69.6	79.3	81.2	80.1	101.7	115,939,000
Winter wheat,	–	–	–	76.8	106.6	31,367,000
Spring wheat,	59.8	61.0	82.3	73.8	104.9	20,757,000
All wheat,	–	–	–	75.6	105.9	52,124,000
Oats,	65.7	81.5	82.2	68.8	99.9	35,250,000
Barley,	66.2	70.0	85.1	72.1	97.0	7,038,000
Rye,	–	–	–	85.0	96.7	1,962,000
Buckwheat,	82.9	87.9	91.1	–	97.0	801,000
Potatoes,	62.3	75.8	84.8	76.0	97.3	3,495,000
Tobacco,	68.0	78.5	82.2	72.6	72.4	893,200
Flax,	71.0	51.7	83.8	80.9	103.3	3,013,000
Rice,	88.3	87.6	88.3	87.7	97.6	705,700
Hay,	68.6	83.1	87.1	64.9	94.1	43,017,000
Apples,	53.9	47.8	53.0	57.9	–	–

The yields indicated by the condition of crops on Aug. 1, 1911, the final yields in 1910, and the averages for 1906–10 follow: —

Crop.	Yield per Acre.			Indicated Total Production, 1911, compared with Total Production (Per Cent) in —	
	Indicated by Condition 1911.	Final, 1910.	Average, 1906–10.	1910.	Average, 1906–10.
Corn (bushels),	22.60	27.40	27.10	83.8	93.0
Winter wheat (bushels),	14.50[1]	15.80	15.50	98.1	101.1
Spring wheat (bushels),	10.10	11.70	13.50	90.6	86.2
All wheat (bushels),	12.80	14.10	14.70	95.6	95.9
Oats (bushels),	23.20	31.90	28.40	72.6	87.7
Barley (bushels),	19.80	22.40	24.80	85.9	83.8
Rye (bushels),	15.60[1]	16.30	16.40	92.9	94.6
Buckwheat (bushels),	18.10	20.90	19.60	84.1	91.2
Potatoes (bushels),	71.50	94.40	96.90	73.8	78.1
Tobacco (pounds),	672.40	797.80	826.00	61.0	74.5
Flax (bushels),	7.60	4.80	9.90[2]	162.2	97.7
Rice (bushels),	32.70	33.90	32.40	94.1	107.5
Hay (tons),	1.14	1.33	1.41	80.4	77.2

[1] Preliminary estimate of yield. [2] Average for 1905–09.

Preliminary returns indicate a winter wheat yield of about 14.5 bushels per acre, or a total of 455,149,000 bushels, as compared with 464,044,000 finally estimated last year, and 450,130,000, the average production of the past five years. Quality is 92, against 92.6 last year.

The condition on Aug. 1, 1911 and 1910, and the average of August 1 conditions of other crops follow: —

Crop.	1911.	1910.	Average.	Crop.	1911.	1910.	Average.
Rice,	88.3	87.6	88.3[1]	Cantaloupes,	74.4	74.7	77.8[2]
Pastures,	59.6	73.0	87.9[1]	Sweet potatoes,	77.7	85.4	86.5[1]
Timothy,	65.4	82.4	87.9[1]	Tomatoes,	72.5	83.3	85.0[2]
Alfalfa,	84.1	81.8	88.9[2]	Cabbages,	67.0	83.4	86.3[2]
Kafir corn,	72.9	71.1	83.9[2]	Onions,	73.6	85.9	88.7[2]
Millet,	60.3	69.7	83.3[2]	Sorghum,	73.5	82.0	86.9[1]
Broom corn,	65.3	70.2	79.9[2]	Sugar cane,	88.2	87.2	89.1[1]
Hemp,	64.7	79.0	85.2[2]	Sugar beets,	89.5	85.2	89.8[2]
Hops,	87.4	88.6	88.0[1]	Blackberries,	67.8	65.3	81.2[2]
Peanuts,	80.9	85.8	86.0[2]	Raspberries,	71.5	64.1	78.6[2]
Apples,	53.9	47.8	53.0[1]	Oranges,	86.2	83.0	86.0[2]
Peaches,	42.7	61.3	54.3[3]	Lemons,	93.7	88.7	89.9[2]
Grapes,	83.6	77.2	85.3[3]	Beans (dry),	81.9	85.3	88.3[2]
Pears,	59.5	61.3	62.3[4]	Lima beans,	75.5	85.6	85.7[5]
Watermelons,	74.7	73.7	77.5[2]				

[1] Ten-year average.
[2] Five-year average.
[3] Nine-year average.
[4] Three-year average.
[5] Four-year average.

In Massachusetts the average condition of corn was 85; of oats, 88; of tobacco, 87; of potatoes, 75; of hay, 77; of timothy, 75; of pastures, 68; of apples, 67; of peaches, 69; of grapes, 85; of pears, 75; of watermelons, 81; of cantaloupes, 85; of tomatoes, 80; of cabbage, 79; of onions, 70; of millet, 84; of blackberries, 78; of raspberries, 74; of beans (dry), 85; and of Lima beans, 81; the acreage of rye compared with 1910 was 95, and the yield per acre 15 bushels; and the production of clover hay compared with a full crop was 67.

Temperature and Rainfall for the Whole Country.

[From United States National Weekly Weather Bulletin.]

Week ending August 7. — For the week, as a whole, the mean temperature continued below the normal over the Mississippi and Missouri valleys, and it was cooler than the average over all districts from the Rocky Mountains westward to the Pacific, the average deficiency ranging from 6° to 10° in the upper Missouri valley and the northern Rocky Mountain and Plateau regions. The temperature also averaged below the normal in a small area in southeastern New England. Over the Ohio valley, Middle Atlantic States, northern New England and the Lake region the average temperature for the week was above the normal, the greatest excess occurring over the lower lakes. The total precipitation for the week was rather generous in amount and fairly well distributed throughout the entire area from the middle portion of the Plains region eastward to the Appalachian Mountains and the middle and south Atlantic coast. Over New England, New Jersey and the eastern portions of New York and Pennsylvania there was little or no rain.

Week ending August 14. — For the week, as a whole, the temperature was above the normal over all districts from the Rocky Mountains eastward, except over southern and western Florida and from the upper Mississippi valley westward, where the weekly averages were somewhat below normal. Maximum temperatures were above 90° except over the more northern States and along the immediate coast from Chesa-

peake Bay northward. West of the Rocky Mountains the week was generally almost continuously cool, and it was below the normal from Minnesota westward to Montana. Local showers occurred the first of the week from the Lake region westward to the mountains. Local rains again prevailed during the middle of the week over portions of upper Missouri and upper Mississippi valleys and Lake region, and there was a rather severe storm on the Gulf coast on Friday. Over the Atlantic coast districts from the Carolinas northward the precipitation was light.

Week ending August 21. — For the week, as a whole, the temperature average was above the normal over the greater part of the country, especially over the Great Plains region and upper Mississippi valley, where the daily average ranged from 4° to 8° above the normal. Small deficiencies occurred only in portions of the lower Lake region and at a few points along the middle Gulf coast. The night temperatures were generally high over the principal agricultural districts, not going lower than 55° over much of the country east of the Rocky Mountains. At the beginning of the week unsettled weather, with local, heavy showers, prevailed over many portions of the districts from the Mississippi valley westward, and on Wednesday the rainfall was fairly general over the more eastern districts. Toward the latter part of the week local showers again overspread the more southern districts east of the Mississippi, and at the same time a considerable rain area again overspread New England and portions of the Middle Atlantic States. Only scattered showers occurred during the week over districts west of the Mississippi.

Week ending August 28. — For the week as a whole the temperature average was below the normal throughout the central valleys and Rocky Mountain region, also over a narrow area along the north Atlantic coast and along the coast of California. The weekly temperatures were above the normal by moderate amounts over most of the Gulf and Atlantic coast States, in the far northwest and over the Sierra Nevada region and the interior of southern California. Local showers and thunderstorms occurred Monday and Tuesday in the

Mississippi valley and Lake region. Local showers continued during Wednesday in the southwest, and during Thursday, Friday and Saturday over a narrow strip from Texas northeastward to the Lake region, in portions of the Middle Atlantic States and over most of New England. Heavy showers occurred during Saturday night and Sunday over many portions of the Atlantic coast States.

Special Telegraphic Reports.

[Weather Bureau, Boston.]

Week ending August 7. — New England. Boston: The temperature averaged somewhat below normal and but little rain fell. Conditions are favorable, although higher temperatures would be beneficial.

Week ending August 14. — New England. Boston: A week of generally fair weather, with much sunshine. Excepting scattered showers in the northern portion, there was but little precipitation, and rain is much needed in nearly all sections.

Week ending August 21. — New England. Boston: The weather was favorable, with seasonable temperatures and frequent showers, the rainfall in some northern parts being considerably above normal.

Week ending August 28. — New England. Boston: The first part of the week was fair and the latter part showery. The rainfall ranged from small amounts in the northern parts of Maine, New Hampshire and Vermont to about 2 inches in southeastern Massachusetts, Rhode Island and Connecticut. Temperatures were seasonable.

The Weather of August, 1911.

Generally speaking, the weather of the month, in precipitation and the temperatures, was very near the normal. However, droughty conditions prevailed from the 1st to the 23d, excepting fairly well-distributed showers, with moderate rainfall, on the 15th and the 18th. Unsettled weather, with showers, prevailed from the 24th to the 29th, during which the rainfall ranged from moderate to very heavy. It was

this storm that brought the precipitation of the month to practically normal. The temperatures of the month were remarkably even, there being no marked extremes in the records of the maxima or the minima. The day temperatures rose to 90° and slightly above in a few instances, and the night temperatures did not fall below 50°. The local storms during the month were fewer, and, with slight exceptions, less severe than usual. Fogs were more prevalent than usual, particularly during the third week, and were a marked feature of the weather of the month. During the prevalence of dry weather there was an abundance of sunshine, and the drought caused much damage to some field and truck crops, and to berries. The rains of the closing week saved late corn, vines and some other crops, and greatly improved grass, meadows and pasturage, and was considered of much benefit to late fruits. There were few days with weather of the "dog day" type, and the month as a whole was very pleasant.

Publications.

The publications of the month comprise the July Crop Report, containing a bulletin on "Root Crops of the Market Garden," by H. F. Tompson, and six reprints from the annual report for 1910. The first three of these appeared in the Crop Report, series of 1910, and the others are lectures delivered at the public winter meeting of the Board, December, 1910. The titles follow: —

Alfalfa as a Crop in Massachusetts.
Growing and Marketing Asparagus.
Celery Growing, Storing and Marketing.
Corn Growing in New England.
The Production of Market Milk.
New England Pastures.

Copies will be sent free upon application.

Dates of Fairs (September 8 to October 26.)

Amesbury and Salisbury at *Amesbury*, September 26, 27 and 28.
Blackstone Valley at *Uxbridge*, September 19 and 20.
Deerfield Valley at *Charlemont*, September 14 and 15.

Eastern Hampden at *Palmer,* October 6 and 7.
Essex at *Topsfield,* September 19 and 20.
Franklin County at *Greenfield,* September 20 and 21.
Hampshire at *Amherst,* September 26 and 27.
Hampshire, Franklin and Hampden at *Northampton,* October 4 and 5.
Hillside at *Cummington,* September 26 and 27.
Hingham at *Hingham,* September 26 and 27.
Housatonic at *Great Barrington,* September 27, 28, 29 and 30.
Massachusetts Horticultural at *Boston,* September 8, 9 and 10 and September 22, 23 and 24.
Middlesex North at *Lowell,* September 14 and 15.
Middlesex South at *Framingham,* September 22 and 23.
Lenox Horticultural at *Lenox,* October 25 and 26.
Plymouth County at *Halifax,* September 13 and 14.
Spencer at *Spencer,* September 22 and 23.
Union at *Blandford,* September 13 and 14.
Weymouth at *South Weymouth,* September 14, 15 and 16.
Worcester East at *Clinton,* September 12, 13 and 14.
Worcester South at *Sturbridge,* September 14, 15 and 16.
Worcester County West at *Barre,* September 28 and 29.

In the circular to correspondents, returnable August 24, the following questions were asked: —

1. What is the condition of Indian corn?

2. What is the prospect for rowen, as compared with a normal crop?

3. What is the prospect for late potatoes, and have you noticed blight or rot?

4. How do the acreage and condition of tobacco compare with former years?

5. What is the prospect for apples, pears, peaches, grapes, quinces and cranberries?

6. What is the condition of pasturage in your vicinity?

7. How have oats and barley compared with former years?

8. What is the condition of celery and other late market-garden crops?

Returns were received from 118 correspondents, and from them the following summary has been prepared: —

Indian Corn.

Corn came forward very rapidly with the warm weather and light showers of August, and at the time of making returns, barring the possibility of an unusually early frost, promised to make a full normal crop. Some correspondents reported that it was behind the average stage of development for the time of year, but that it was coming forward very rapidly at time of writing. It apparently suffered from drought but very little, except in a comparatively few instances, is well eared and shows a good growth of stover.

Rowen.

The rowen crop will be very light in all sections, there being practically none in many eastern districts, where the drought has been more severe than in western and central sections. This is due to the severe drought following the cutting of the first crop, much of which was allowed to stand until a late period, still further reducing the probabilities for the second crop, and to a general failure of clover to germinate in the fall of 1910. Clover forms such a heavy proportion of the second crop in any year that this failure of itself is sufficient to greatly reduce the rowen crop. Some slight improvement may be expected following the rains of the last week of the month, but they come so late that they are not likely to have any very appreciable effect.

Potatoes.

Potatoes are reported as showing a luxuriant growth of vines, but there are many complaints that they did not set well and that they are few in the hill and small. This is due to drought at the time of setting and for the weeks immediately following, and there is not much to be expected in the way of improvement even with the recent rains. Blight is reported in a considerable number of instances and there are a few reports of rot. Blight is usually followed by rot, especially where rain comes soon after the blight, and we may expect a further reduction of the crop from these causes.

Tobacco.

The acreage of tobacco shows a slight decrease in almost all of the tobacco-producing towns of the Connecticut valley. It was generally reported to be in good condition and promising good yields. Some crops had already been sold at good prices, and shade-grown tobacco was generally making very satisfactory sales. Cutting had begun in only a few cases at time of making returns, which indicates that the crop was not quite as far advanced as usual at that date.

Fruits.

The returns indicated a light crop of apples in most sections, with an unusually heavy drop, which continued well into August. The recent rains should have a good effect on the portion of the crop remaining, but rather less than half a crop is promised for the State as a whole. Fruit was reported as unusually fair, and there was less insect injury than usual, owing to increased spraying. Pears are generally a good crop, mostly grown for home use, except in a few towns. More attention should be paid to this fruit, as it is, in the opinion of many growers, more profitable than apples, under the present market conditions for choice pears. Peaches are a much better crop than usual for the State as a whole. Few report in regard to quinces, as the crop is not an important one, but they are a good crop so far as reported. Grapes promise to be abundant in almost all sections. Cranberries are below the normal, the berries being small, owing to drought, and the yield in general less than usual.

Pasturage.

Pastures were generally in good condition, for the time of year, in western sections, fair in the central part of the State, and much below the average in eastern sections. Many reports come from this part of the State that they are burned or all dried up. Conditions improved in central and western sections with the showers of August, and the heavy rains of the latter part of the month will undoubtedly bring about a great improvement in feed in pastures in all sections.

Oats and Barley.

Oats were a light crop, where grown for grain, short of stalk and not especially well headed, owing to drought. For hay they were more satisfactory, being sown later in many cases. For green feed they gave a lighter yield than usual, but were fairly satisfactory. Barley is grown mainly as a late forage crop, and was backward at time of making returns. It should improve with the heavy and frequent rains and make good fall forage.

Late Market-garden Crops.

Celery was short and backward in most sections at time of making returns. With seasonable weather, now that the drought has been broken, it should, however, make a satisfactory crop. Other late market-garden crops generally promised well, and unless frosts are unusually early we can reasonably expect good average yields. Midsummer market-garden crops have generally made light yields and brought good prices.

NOTES OF CORRESPONDENTS.

(Returned to us August 24.)

BERKSHIRE COUNTY.

Becket (W. H. Snow). — Indian corn is looking well, but is late except on dry soil. Not much rowen will be cut this year. Blight has struck late potatoes, but no rot; early potatoes are very small. Apples, pears and grapes are very light crops. Pasturage is improving, owing to showers. Oats and barley have been average crops. Celery and other late market-garden crops promise well.

West Stockbridge (J. S. Moore). — The past month has been remarkably good corn weather and good crops are expected. Dry weather has affected rowen and there will be a shortage unless we get more rain. There will be half a crop of apples and pears in abundance; other fruits not raised. Pastures are in poor condition on account of dry weather. Oats are a fairly good crop and there is but little barley raised. No celery or other late market-garden crops are raised, except for home use.

Lenox (Horatio H. Sears). — Indian corn is generally good. There is very little clover rowen on account of failure of last year's seeding. The prospect is for a small crop of late potatoes, with little blight or rot. The prospect is good for apples, pears and peaches. Pasturage is in very poor condition. Oats are less than an average crop. Celery and other late market-garden crops are in fair condition. The effect of the dry weather continues, the few recent showers not being enough to relieve the drought.

Washington (E. H. Eames). — Indian corn promises to be only half a crop. Rowen is about an average crop. Late potatoes promise well, with no blight or rot. Apples and pears are very good crops. Pastures are in very poor condition, owing to dry weather. Oats and barley are about the same as in former years. Celery and other late market-garden crops promise very well.

Hancock (B. H. Goodrich). — Corn shows the effect of drought badly. The rowen crop will be much below the normal. Potatoes are a light crop, with considerable blight, but no rot as yet. Apples are a light crop; pears and grapes fair. Pasturage is dry, yet cattle are getting more feed than would seem possible. Oats are uneven, averaging fair to good crops. Celery and other late market-garden crops are not grown.

Dalton (Wesley B. Barton). — Indian corn has improved during the last month and will give a fair crop. Rowen is half a crop. Late potatoes promise half a crop, with some blight. Apples are half a crop and pears a two-thirds crop. Pasturage is in fair condition. Oats and barley are 60 per cent of a full crop. Celery and other late market-garden crops are in fair condition.

Windsor (Harry A. Ford). — Indian corn is a normal crop. There will not be much rowen, owing to drought. No blight or rot yet on potatoes, and late ones promise better than the early crop. There will be some apples, but not a normal crop. Pasturage is about normal in condition for the time of year. Oats are quite a good crop, though some lodged early.

Williamstown (S. A. Hickox). — Corn promises a normal crop. The prospect for rowen was injured by drought. Late potatoes promise a good crop. Apples are half a crop; pears 60 per cent; grapes 70 per cent. Pastures are nearly brown. Oats and barley are nearly normal crops, perhaps 90 per cent. Rowen would improve somewhat with more rain.

FRANKLIN COUNTY.

Rowe (Henry D. Wright). — There is the prospect of a good crop of corn. There will be very little rowen to cut. There is no blight or rot on potatoes and a fair crop is in prospect. The crop of fruit will generally be small, although it looks well where prayed. Pastures are short and dry. Oats and barley were both good crops.

Leyden (Frank R. Foster). — Indian corn is in good condition. The prospect is that there will be about a third of a normal crop of rowen. The prospect is better for late potatoes than it was for early ones; there is some blight but no rot. Apples are half a crop; pears one-third; peaches one-third; grapes a full crop. Pasturage is in fair condition. Oats and barley are normal crops.

Gill (F. F. Stoughton). — Indian corn is in very good condition. There will be a light crop of rowen. Late potatoes are looking very well. Winter apples will probably be a light crop. The condition of pasturage is not very good, owing to drought.

Conway (L. T. Hopkins). — The rains have pushed the corn crop ahead very rapidly. The rowen crop is very light, though some are hoping that it will grow so as to give a little late feed. Dry weather injured potatoes and what the rains will do for them time alone will tell. Tobacco has made a very good growth; acreage 10 per cent less than usual. Apples are a light crop; pears good; grape vines are loaded. Pastures are all dried up, but stock is looking well. Oats and barley have given very good crops where sown for hay.

Deerfield (Dwight A. Hawkes). — Indian corn is in excellent condition. The prospect is that the rowen crop will not be more than 15 per cent of the normal. The prospect is not good for a full crop of potatoes. The acreage of tobacco is normal and the condition of the early set fields is good. Pears and apples will give less than half crops. Pasturage is still short, although it has improved since the rains. Oats were a good crop; no barley grown.

Sunderland (Geo. P. Smith). — The corn crop looks better than in average years. The prospect for rowen is poor. Potato vines have made a fair growth, but show some blight. The acreage of tobacco is decreased, but the crop is a good one and many have sold at good prices compared with former years. Apples are few, pears plenty and there will be some grapes. Feed is short in the pastures. Oats and barley are not much grown. Celery and other late market-garden crops are backward, but growing well now. Onions will be less in yield than in the past two years, but prices now offered are higher.

Montague (A. M. Lyman). — Indian corn is in very fair condition and coming on well. Rowen will give about half a crop. There will be about half a yield of merchantable potatoes; no blight or rot as yet. The acreage of tobacco is slightly decreased, but the crop is of extra quality. The prospect is for much less than a normal yield of fruit and considerable of it is poor fruit. Pasturage is well fed down and is now short. Oats and barley are fairly good crops, with the acreage less than usual. Celery and other late market-garden crops are making good growth since the rains, but have much to make up. Rye has been a good crop. Timothy for seed has turned out profitably.

Wendell (N. D. Plumb). — Indian corn is somewhat backward, but a normal yield is promised. There is now rowen to be cut. Potatoes are about three-fourths of a normal crop, with no blight or rot as yet. There will be about one-fourth of an average crop of fruit. Pasturage is in very poor condition. Oats and barley are about three-fourths crops. Celery and other late market-garden crops are not grown here. Hay and corn are the only crops that withstood the drought.

New Salem (Daniel Ballard). — There will be a good average crop of Indian corn. Apparently rowen will not be more than half a crop. There are some good yields of late potatoes, but the crop is light on the whole, with no blight or rot as yet. Apples are a light crop; pears more plenty; peaches scarce; grapes plenty. Pasturage has suffered from drought and feed is short. Oats and barley fair crops, but were mainly cut for forage. Celery and other late market-garden crops are little raised except for home use.

HAMPSHIRE COUNTY.

Greenwich (Walter H. Glazier). — Indian corn is looking well, but is a little late. There will be but very little rowen cut. Late potatoes are doing well since the recent rains. There are but few apples; good crops of grapes and plums. Pasturage is looking well for the time of year. Oats and barley are only grown for forage. Celery and other late market-garden crops are not grown for market. Early potatoes were a light crop. Corn and mowing lands have improved greatly since the rains.

Prescott (W. F. Wendermuth). — Indian corn promises a full normal crop. Rowen is probably not over 50 or 60 per cent of the normal. There is some blight on late potatoes and the crop will probably be light, possibly 75 per cent of the normal. Apples are dropping badly, but promise a fair crop for an off year; other fruits grown only for home use. Pasturage is in considerably better condition than a month ago. Oats and barley are not average crops, perhaps 80 to 85 per cent of the average, and are only grown for forage. Celery and other late market-garden crops are not grown in marketable quantities.

Amherst (Wm. P. Brooks). — Indian corn is excellent, except on lighter soils, and is further advanced towards maturity than usual. The rowen crop is much below the average, except on the best grass soils, well enriched and where first crop was cut early; perhaps a two-thirds crop. The potato crop must be small, the tops have become rank since the rains, but tubers of any size are few in the hill, and many just starting will probably not attain merchantable size. The acreage of tobacco is slightly increased and the crop excellent. Pasturage is decidedly short except under the very best soil conditions. Oats and barley are too little grown to furnish basis for report; oats for forage were good. Apples are a fair crop; pears normal; peaches good; grapes excellent; quinces fair. Celery and other late market-garden crops are little grown.

South Hadley (W. F. Person). — Corn is doing well and will be a good crop. Rowen will be a small crop. Potatoes are a small crop with some rot. Apples are a light crop; pears and grapes good. Pastures are very dry. Oats are about an average crop. Celery looks well considering the dry weather. The season has been very dry and all streams are very low and many dry, but all crops look very well.

Hatfield (Thaddeus Graves). — Indian corn stands the dry weather well and is looking finely. There will be very little rowen. Potatoes, late and early, are small. Tobacco is about normal in acreage and is looking well. There will be a small crop of all

fruits. Pasturage is a little short. Oats and barley are little if any raised. Celery is small and backward; other truck crops not grown. Onions are much raised here and are a little under size, but of good quality.

Williamsburg (F. C. Richards). — Corn is very good considering the dry weather; dent corn especially so. There will be almost no rowen, except on wet bottom lands. Late potatoes are of very good quality, but are very few in the hill. The acreage of tobacco is somewhat smaller than usual and the crop is in fair condition. Apples are very smooth, but of small size; pears a very good crop; peaches a small crop. The recent rains have freshened pastures somewhat. Quinces are a small crop. No market-garden crops of any amount are grown.

Westhampton (Levi Burt). — Indian corn is fully up to the average. Rowen will hardly pay to cut. Potatoes will be a very light crop in this vicinity. Apples are about half a normal crop; pears and quinces hang full. Pasturage is very short and dry. Oats and barley are fully up to the average. Celery and other late market-garden crops are not grown.

Plainfield (C. A. Williams). — The corn crop bids fair to be good and is growing well. There will not be any rowen of any amount. Late potatoes will be a better crop than early ones. There will not be an average crop of fruit and it is small in size. Feed in pastures is very short and dry, but the late rains will help it. Oats and barley are average crops and have been more raised than for years. What market-garden crops are raised are looking fairly well.

HAMPDEN COUNTY.

Blandford (Enos W. Boise). — Corn has made extra growth and promises a full yield, but is late. The second crop of hay is short. All potatoes show only medium crops; no blight or rot. Apples are short, not over half a crop; pears a full crop, also plums. Pastures are short and dry. Summer grain crops gave about three-fourths yields. Garden crops promise only medium yields.

Russell (E. D. Parks). — Corn is looking very well, but is not eared out heavily. There will be but little rowen cut this year, the crop being much below the normal yield. Fruit will be below average in yield, except pears. Pasturage is very short and dry. Oats and barley are below the average. Celery and other late market-garden crops are about as usual in yield.

Agawam (J. G. Burt). — Indian corn is very good, considering the dry weather. The prospect for the rowen crop is not very good. The prospect for late potatoes is poor and they show some rot. The acreage and condition of tobacco is about the same as usual.

The prospect for apples and pears is good. Pasturage is dry. The weather has been too dry for oats and barley. Celery and other late market-garden crops are in good condition.

West Springfield (N. T. Smith). — Indian corn is about an average crop except that it is a little late. Very little rowen will be cut in this section. The prospect for late potatoes is poor, and there is some blight, but no rot as yet. Formerly large quantities of tobacco were grown in town, but this year there is but one field, which is very fine. The apple crop is short; other fruits average. Pastures are in poor condition, freshened by the recent showers, but now in need of rain once more. Oats and barley are not grown for grain, but made a fair growth for green feed and hay. Celery has suffered from drought and is below normal; cabbage poor; turnips only just started.

Chicopee (E. L. Shaw). — Indian corn is in good condition. Rowen is generally a small crop, though some fields are fair. Late potatoes have blighted and the crop is small and of poor quality. Apples and grapes are good and pears a fair crop. Pasturage is in fair condition. Oats are a good crop; no barley grown except for late green feed. Celery is slow, other garden crops fair, but not up to the usual at this time.

Ludlow (Henry M. Bliss). — Corn is 95 per cent of a full crop. Rowen is about a two-thirds crop. Late potatoes will give 60 per cent of a normal yield. Tobacco is about 75 per cent of a normal crop. Apples 50 per cent of the normal; pears 60; peaches 90; grapes 85; cranberries 40. Pasturage is much below the normal in condition. Oats are a two-thirds crop. Celery is 70 per cent of the normal and other late market-garden crops 85 per cent. The severe drought tells the whole story.

Hampden (John N. Isham). — Corn is one of our best crops, but the ears are smaller than usual. The prospect for rowen is very poor. Late potatoes suffered from drought and the indications point to blight. The prospect is good for all fruits; peaches are a very full crop. Pasturage is improving since the rains and regaining a green color. Oats made a good growth, but were mostly cut to feed green or hayed. Market-garden crops are looking well, though cabbage started slowly.

Brimfield (F. N. Lawrence). — Indian corn is a normal crop and with two weeks more without frost will be matured in good shape. Only a small amount of rowen will be cut. Late potatoes are looking finely, but blight has struck some early planted fields. Apples are about half a crop; pears full; peaches a three-fourths crop. Pasturage is nearly all dried up and cows must be fed at the barn if we are to get any milk. Oats and barley are three-fourths crops. Celery and other late market-garden crops are not grown here.

WORCESTER COUNTY.

Warren (William E. Patrick). — There is a very large growth of corn, well eared, but it is late and early frosts would ruin it. There is no rowen in sight at present. Potato vines look well, but they are set for a small crop; no blight or rot as yet. There are very few apples of poor quality; large yields of pears, peaches and grapes. Pasturage is very poor and many have to feed hay. There is a very good crop of oats, fully up to the average.

West Brookfield (Myron A. Richardson). — The late rains have improved the corn crop considerably, but it is now backward and not up to the normal. The rowen crop is a failure. The potato crop is a problem; blight has not put in its appearance as yet. There are not many apples and they are falling badly, owing to dry weather. Pasturage is brightening up on account of rain, but will not help much. The oat crop was above the normal in some places and a failure in others. Late garden stuff is doing well.

New Braintree (Charles D. Sage). — Indian corn was injured by drought, but is coming along fairly well. Little or no rowen will be cut. I have noticed no blight, but the crop of late potatoes will be small. There are very few apples; grapes and pears fair crops. Oats and barley are fair crops, but mostly grown for hay. Celery and other late market-garden crops are little grown for market.

Dana (Lyman Randall). — Indian corn is backward and uneven and there cannot be a normal crop. There will be no rowen of any account. Late potatoes are looking well, with no blight or rot so far. There will not be a very large crop of any kind of fruit. Pasturage is short. Oats and barley are below average crops. Celery is not grown here; other late market-garden crops are doing well now.

Templeton (Lucien Gove). — Corn is quite uneven, some fields very good and others, on light land, decidedly poor, owing to drought. There is scarcely any rowen. There is no blight or rot as yet on late potatoes, but the crop is below the average. Apples are 60 per cent of a full crop; pears, 90; grapes, 90. Pastures are in very poor condition, burned by heat and drought and the rains helped but little. Oats and barley are lighter crops than usual and seriously affected by drought. Celery is not raised; other market-garden crops below the normal.

Gardner (W. E. Knight). — Indian corn is in good condition. There is practically no rowen this year. Potato vines look well, no blight or rot as yet. Apples are not over a one-third crop. Pastures have not recovered from the dry weather. Oats and barley are almost entirely used for forage, and were light crops. Celery and other late market-garden crops are not grown in this vicinity.

Ashburnham (E. D. Gibson). — Indian corn is in good condition. There is hardly any rowen, owing to drought. A light yield of late potatoes is probable; blight has appeared, though not badly. Apples are few; pears, peaches and grapes are good. Pasturage is very short. Oats and barley are hardly average crops. Farmers are ploughing and reseeding where drought killed spring seeding.

Princeton (A. O. Tyler). — Corn is looking well. There will not be any rowen. There is no blight or rot, but late potatoes will give but a small yield. Apples are good, but small and dropping badly. Pastures are all dried up. Oats and barley are about half crops. Celery and other late market-garden crops are looking fairly well. Pears and plums are good crops; peaches small for the season; grapes good; quinces small; cranberries fine.

Southboro (Edward F. Collins). — Indian corn is 90 per cent of a normal crop; stover has made good growth, but does not ear out well. Late potatoes will be a three-fourths crop, with no blight or rot as yet. Apples are 90 per cent of a full crop, but small for the season; peaches did not set. Pastures are very dry and there is no feed in them. Oats and barley are 90 per cent of the normal. Celery and other late market-garden crops will give light yields, owing to drought.

Shrewsbury (Fred J. Reed). — Indian corn is not very promising. Rowen is very poor. Late potatoes are small, with some blight or rot. There will be a very light yield of fruit. Pasturage is in very poor condition. Oats and barley are very light crops. Celery and other late market-garden crops will give very light yields.

Leicester (H. H. Kingsbury). — Corn is looking well and has suffered the least from drought of any crop. There is not 10 per cent of a normal crop of rowen, practically none. Potatoes are a scant crop, few in the hill and very small. The prospect is good for a normal crop of apples. There is a slight improvement in the condition of pasturage during the past month, but it is still short. Oats and barley have made good growth, with a fair yield, and are all being hayed. The weather has favored the growth of celery, cabbage and turnips, the nights being cooler and we having had two light showers. There is prospect of good yields of pears, plums and grapes.

Auburn (William Gilbert). — Indian corn is looking well, but with a good many missing hills. There is very little rowen. Potatoes promise an average crop, with no blight or rot. Pastures are all dried up. Oats and barley are light crops.

Milford (John J. O'Sullivan). — Indian corn is in fair condition. The prospect is below the average for rowen. Apples and pears are poor crops; quinces fair; peaches, grapes and cran-

berries good. Pasturage is in poor condition. Oats and barley are average crops. Celery and other late market-garden crops are very little grown.

MIDDLESEX COUNTY.

Hopkinton (W. V. Thompson). — Indian corn has suffered from drought, but some fields would be fairly good with a little more rain. There is no rowen. There is little chance of a crop of potatoes of any account. Apples are not a very good crop and are dropping; pears fair; peaches few; grapes fair. Pastures are dried up. Oats were a fairly good crop for fodder. Celery and other late market-garden crops are not much raised.

Marlboro (E. D. Howe). — Corn is in very good condition, considering the dry season; that planted on stable manure shows better than that on fertilizer. Rowen will be about 10 per cent of a normal crop. Late potatoes promise a three-fourths crop, with no blight or rot. Apples 60 per cent of a normal crop; pears, peaches and quinces, 50; grapes, 75. Pastures are all dried up.

Maynard (L. H. Maynard). — Indian corn looks well, but is late, and the crop will be an average one. The rowen crop will be short, owing to dry weather. Potatoes look well, but are late; some blight, but no rot as yet. Apples are short, 50 per cent of a normal crop; pears small and poor; peaches average; grapes a full crop; quinces and cranberries an average crop. Pastures are in poor condition, though the recent rains helped out a little. Oats and barley on high land were failures. Celery is in poor condition; market-garden crops have improved wonderfully since the rains. The onion crop is the poorest for many years. Fall web worms are making havoc on apple and other fruit trees and the elm-leaf beetle has practically stripped the elms in this section.

Westford (J. W. Fletcher). — Indian corn is in good condition. There will be very little rowen this year. The prospect for late potatoes is good, with no blight or rot. There will be full yields of apples and pears. Pasturage is in poor condition.

Dunstable (A. J. Gilson). — Corn is a little late, but is otherwise in good condition. The crop of rowen will be below the normal. Late potatoes promise a medium crop; no blight or rot has been noticed. Apples are a light crop, also pears and peaches; grapes and cranberries are good crops, but the berries are small. Pasturage has improved since the rains, but feed is still short. Oats and barley are principally raised as forage crops.

Chelmsford (W. B. Bullock). — Indian corn is a good crop and is well advanced for the time of year. There will be an average crop of rowen. Potatoes will be a light crop, though there is very little

blight. Apples will be a light crop; other fruit quite plenty. Pastures have improved a good deal since the rain. Oats and barley will be average crops. Celery and other late market-garden crops are looking finely.

Lexington (Howard M. Munroe). — Indian corn promises to be an average crop. The rowen crop will not be over two-thirds of the average. There is very little blight or rot on late potatoes, but the crop will be very light on most fields. Apples promise a light crop; pears, peaches and grapes will be more than full crops. Pasturage is about average for the time of year. Oats and barley were about average crops. Celery is looking quite well, but the acreage is smaller than usual. Recent rains have improved the condition of late market-garden crops.

Winchester (S. S. Symmes). — Indian corn is not grown here. The rowen crop is about normal. Potato vines are still green and the tubers small and growing. Apples are a very small crop; pears a good crop. Pasturage is good since the rains came. Celery is very small, just beginning to grow. Recent showers have started things, but the ground is very dry to a considerable depth.

Stoneham (J. E. Wiley). — The prospect for the rowen crop is poor. Late potatoes will not give a good crop, although neither blight nor rot has appeared. Apples, pears, peaches and grapes are good crops. Pastures are dry. Celery and other late market-garden crops are in fair condition.

Weston (Henry L. Brown). — Most fields of corn are in good condition, but it is not much grown in this locality. There will be very little rowen. Potatoes are looking well, although some complain that the hills contain no tubers when dug. There is a good crop of fall apples and some pears; other fruits not grown to any extent. Pasturage is very dry. Oats and barley are not grown except for fodder. Celery and other late market-garden crops are backward, but look well. Most fall crops are looking well, notwithstanding the dry weather.

ESSEX COUNTY.

Merrimac (S. Bixby Sargent). — Indian corn is in good condition. Rowen is fairly good where the first crop was cut early. There is a light crop of potatoes, but I have not seen any rot. Pears are plenty and apples a light crop. Feed is very short in pastures. Oats and barley are not raised for grain; but give two-thirds of a crop for fodder.

Methuen (Frederick A. Russell). — Corn is looking well. Rowen will be a very light crop. The prospect for late potatoes is poor, with no blight nor rot. Apples few; pears plenty; peaches average. Pasturage has been very poor throughout the season.

Oats and barley are usually cut green for fodder. Celery is small and late; other market-garden crops small. On account of extremely dry weather in spring and early summer many seeds failed to germinate and many young plants were burned off by the intense heat and lack of moisture.

Groveland (A. S. Longfellow). — Corn has made a good growth, but is a little below the average. There will be some rowen, perhaps half a crop. The prospect is good for late potatoes, with no rot as yet. There are very few apples; full crops of pears and peaches. There is very little feed in pastures. Oats and barley are only raised for forage crops. Cabbage is looking finely.

Rowley (D. H. O'Brien). — Indian corn is in fair condition. The rowen crop is very poor. The prospect for late potatoes is poor, though there is little blight and no rot. Apples half a crop; pears fair; peaches, grapes and cranberries good. Pasturage is in very poor condition. Oats and barley are below average crops. Celery and other late market-garden crops are poor owing to lack of rain.

Topsfield (B. P. Pike). — Indian corn is a three-fourths crop. Rowen will be half of a normal crop. Late potatoes are looking well and I have seen very little blight. Apples and pears half crops; grapes a good crop. Pasturage has improved, but is still very poor. Oats and barley were all cut for hay and were a short crop. Celery and other late market-garden crops were short, on account of dry weather.

Wenham (N. P. Perkins). — I notice but little corn in this vicinity, what there is is strong and healthy, with prospect of a good crop. Rowen is now growing fairly well on new and well manured land, with the prospect of half a normal crop. Potatoes are of fair size, but not many in a hill; some blight, but no rot as yet. On some farms apple trees are quite full, with prospect of a good crop, while others have hardly enough for home use; but few pears and quinces; some peaches and grapes. Pastures are somewhat improved of late, and stock cattle get a fair living, but milch cows must be fed at the barn. Oats and barley for forage compare favorably with former years. Farmers are taking extra care of late crops, cabbage, carrots, parsnips, beets, etc., and hope to get half crops if the season holds out well. Not much celery is grown hereabouts. The onion crop is about a failure in this section, some farmers losing their entire crop from the work of onion maggots and cut worms.

NORFOLK COUNTY.

Cohasset (Ellery C. Bates). — Indian corn is not grown. The prospect is good for the rowen crop. Late potatoes promise well, with no blight or rot as yet. The prospect is good for fruit of all

kinds. Pasturage is in poor condition. Oats and barley are not raised. Celery and other late market-garden crops are in good condition. Condition of all late crops good, but rain is needed.

Canton (Edwin V. Kinsley). — Corn is in normal condition and a full crop is promised. The rowen crop is almost a total failure. Late potatoes look well and no blight has appeared. Apples, pears, grapes and cranberries give full crops. Pasturage is dry. Celery and other late market-garden crops are in good condition. Oats and barley are about 75 per cent of normal yields. The supply of milk is short and the price of dairy cows very high. Although we have had two heavy rains, sufficient to keep the surface of the ground from drying up, yet the streams are very low.

Norwood (Frank A. Fales). — Indian corn is looking well. Rowen will be a light crop. There is no blight or rot on late potatoes, but they are not more than half a crop. Apples, pears and peaches will be light; grapes and cranberries looking well. Pasturage is in very poor condition, except on low land. Oats and barley have given good normal crops. Celery and other late market-garden crops will be light.

Millis (E. F. Richardson). — Corn is a fair crop, but a little short. There is very little rowen. The prospect for late potatoes is fair. Apples and pears 50 per cent of a full crop; peaches 85; grapes 90; quinces 20; cranberries 40. Pastures are dried up. Oats and barley are about normal crops. Celery and other late market-garden crops are in fair condition.

Franklin (C. M. Allen). — Indian corn is in very poor condition. Rowen is not a normal crop, but nearly so. Late potatoes are light crop with some scab. Apples 50 per cent of a normal crop; pears 100; peaches 90; grapes 60; quinces and cranberries little grown. Pasturage is in poor condition. The weather has been too dry for oats and barley. Celery and other late market-garden crops are but little raised here.

Foxboro (William E. Perkins). — Indian corn is a two-thirds crop. The prospect for rowen is very poor, but a third what there usually is. There is some blight on late potatoes and they will be a very light crop. There will be fair crops of apples, pears, peaches and grapes. Pastures are dry.

BRISTOL COUNTY.

Easton (Wm. N. Howard). — Indian corn is in good condition. The rowen crop will be below the normal. There is early blight on late potatoes to some extent and they have set lightly, but there is no rot as yet. There will be a large fruit crop. Pasturage is in fair condition. Celery and other late market-garden crops are good as a rule.

Mansfield (E. Jasper Fisher). — Indian corn promises a very good crop. The prospect for rowen is rather poor and there will be a very small crop. Late potatoes look well; some blight and no rot. The prospect is very good for fruit of all kinds. Pasturage is in much better condition than usual since the late rains. Oats are not quite as good a crop as usual; no barley raised. Celery and other late market-garden crops are all looking well.

Attleborough (Isaac Alger). — Indian corn is in excellent condition. The prospect for rowen is poor. There will be about a three-fourths crop of late potatoes. Apples are abundant; grapes and cranberries fair. Feed in pastures is short. Oats and barley are below average crops. Celery and other late market-garden crops promise fairly well.

Dighton (Howard C. Briggs). — Corn is below the average in condition. Rowen will be half a crop. The prospect is poor for late potatoes, though there is but little rot or blight. There will be light yields of all fruits except grapes. Pasturage is in poor condition. Oats and barley are below the average. Celery and other late market-garden crops are poor. Crops are suffering from dry weather again.

Acushnet (M. S. Douglas). — Indian corn will give half a crop. There is very little rowen this year. The prospect for late potatoes is fairly good, with no blight or rot as yet. Apples normal; grapes good; pears and quinces scarce. Pasturage is in fairly good condition. Oats and barley are half crops, owing to dry weather. Celery and other late market-garden crops are looking fairly well. We have had frequent showers lately and late crops are looking fairly well.

PLYMOUTH COUNTY.

Norwell (Henry A. Turner). — Indian corn is in good condition. Since the showers rowen gives promise of a normal crop. Late potatoes are looking well and promise a good crop. Apples good, also pears and grapes, and cranberries promise well. Pastures are rather short, although the recent showers have helped. Oats and barley are little grown.

Hanover (Harrison L. House). — Corn is in very good condition. Rowen is about a normal crop. Potatoes appear to be a light crop, with some blight. All fruit is plentiful and of good quality. Pasturage is in fair condition, but dry weather has hurt it. Oats and barley are not raised. No celery is grown here.

Brockton (Davis Copeland). — Corn has improved wonderfully and is looking well. On moist land rowen is nearly a normal crop. Late potatoes are looking well, and I have not noticed any blight. The prospect is good for all kinds of fruit. Pasturage is short, but improved since the rains. Celery and other late market-garden crops are looking fairly well.

Kingston (George L. Churchill). — Indian corn is looking well and bids fair for a good crop. Rowen promises about one-fourth of a normal crop. There will not be a heavy crop of potatoes, although there is no blight. Apples, pears, peaches, grapes and quinces are good crops; cranberries short. Pastures are now in very good condition. Oats and barley are not much raised, but are up to the average. Not much celery is grown; other late market-garden crops fair. The recent rains have started crops growing, but a long season is needed and an early frost would do great damage.

Carver (J. A. Vaughan). — Indian corn is in fair condition, but rain is badly needed to develop the ears. The rowen crop will be less than usual. Late potatoes are a light crop with no rot as yet. There is a good prospect of a good crop of all kinds of fruit. Pasturage is dry. But little celery is raised here. We have had no rain since the middle of July and all crops are suffering. There are fewer insects attacking fruits than usual.

Mattapoisett (E. C. Stetson). — Indian corn is in quite good condition. The prospect for rowen is rather poor. Late potatoes are looking rather well, with some blight and rot. The prospect is good for fruit of all kinds. Pastures are in rather poor condition. Oats and barley are very little raised. Celery and other late market-garden crops are in fairly good condition.

BARNSTABLE COUNTY.

Falmouth (D. R. Wicks). — Corn is looking well for a normal yield and making a good growth. Rowen is a very poor crop, there being little worth cutting. No blight or rot on potatoes; early crop small and badly grub eaten. Apples are a small crop; also pears and peaches; grapes and cranberries fair. The rains have started pasture grass into growth so that it begins to show green. Oats and barley are about normal crops. Celery and other late market-garden crops are looking well, but are small in growth.

Mashpee (W. F. Hammond). — Indian corn is about an average crop. Rowen is below the average. Late potatoes are below the average, but show neither blight nor rot as yet. Apples, pears and peaches are half crops; grapes and cranberries three-fourths crops. Pasturage is below the average. Oats and barley have not been average crops. Late market-garden crops bid fair to be average yields.

Barnstable (John Bursley). — Indian corn is late and in certain fields has been badly injured by root worms. The rowen crop is practically a total failure. Potato tops are large and green, with no blight or rot. Peaches and grapes are fair crops; apples and pears very light; cranberries below average. Pasturage is very dry and brown. Oats are a very good crop, all cut for grain

and no barley grown. Cape turnips are very small and need rain.

Eastham (A. L. Nickerson). — Corn is looking very fair considering the lateness of planting and the very dry weather. So far as I have observed the crop of rowen is very small. Late potatoes are looking fairly good and I have seen practically no blight or rot. The apple crop is very light; pears quite plenty; grapes and cranberries good crops. Pastures have improved so that feed in them can be called good. Oats and barley are not grown. Celery and other late market-garden crops are not raised here.

Truro (John B. Dyer). — Indian corn is an average crop, though little raised. The prospect for the rowen crop is below the average, on account of dry weather. Late potatoes are normal in condition and I have heard of no rot. All fruits are above the average, except turnips, which are short of last year. Oats are little raised and no barley is grown. Celery has grown slowly; other late market-garden crops fair.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — Indian corn is below the average. The prospect for rowen is very poor. There is a poor prospect for late potatoes, although I have not noticed either blight or rot. The prospect is fair for fruits of various kinds. Pasturage is in average condition. Oats and barley are below average crops.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

BEANS, CORN, TOMATOES, LETTUCE AND SPINACH AS MARKET-GARDEN CROPS.

BY HENRY M. HOWARD, *Dix Farm, West Newton, Mass.*

Under this title the crops of beans, corn, tomatoes, lettuce and spinach will be considered, with brief remarks on how to have them in good condition for market during the whole season of possible outdoor growing.

BEANS.

As a market-garden crop beans are raised to sell green, either as string beans or shell beans. For the earliest planting select well-drained, light soil, and manure liberally in the row, using about 10 cords of well-rotted manure to the acre. Cover the manure in with a smoothing drag or harrow, and sow the beans by hand or machine, so that they will stand six beans to a running foot of row. Cover the beans not over 1 inch deep. Have the rows 2½ feet apart. Sow the beans every few days from April 8 to May 1, and sow again May 15, and once a week thereafter until August 1. Do not figure on getting a profitable crop from anything sown after August 4. For all sowings of beans after May 1 the broadcasting of manure will be advisable and heavier ground may be used.

Beans will increase in yield immensely, almost double, when irrigated properly. The vines when young will ordinarily get all the moisture necessary, up to podding time, from the rainfall. It is at podding time that water can be used to best advantage.

The earliest crops of beans will make from 100 to 150 bushels per acre, and sell for something like $200. The later crops of beans will produce more bushels, and often bring in fully as much money.

If proper succession plantings are made you may have beans to sell from July 1 to October 1.

Good varieties to plant are Red or Black Valentine for the round-pod and Bountiful or Long Yellow Six Weeks for the flat-pod green sorts. The Wardwells Kidney Wax is the most popular wax variety.

Of the varieties used for green shell beans the Red Pod Horticultural of some strain will be found most satisfactory. Try to find some strain which has done well in your vicinity and plant that. The early and late crops of this bean seem to be most profitable and least liable to spot. It may be planted as early as April 8 and as late as July 10, with a fair show of getting a crop. New land or land lately in grass seems peculiarly adapted to Red Pod shell beans. Pole varieties of the Red Pod beans are often very profitable. Brockton and Worcester are standard varieties.

To get beans up well in a dry time pursue this method carefully: open three furrows with the plow, sow two of these and cover them 2 or 3 inches deep, leaving one row as a guide. Open two more furrows and sow two, and so continue till the plot is planted. Do not leave the open furrow exposed to the sun over fifteen minutes if you would like to have good results. A Planet Jr. No. 5 seed drill is a good machine to sow and cover beans with, but even then the plow should be used in a dry time and the machine run in the bottom of the furrow. A careful plowman can cover beans very nicely with the plow, and for summer planting there is no better way than to have the plowman open the furrows and cover the seed while another man sows the beans. Beans are considered good for seed up to three years old.

Corn.

Since the New England Corn Exposition of last November, with its lectures and literature, there seems to be little left to say in regard to corn culture. Market gardeners plant corn early in April, from the 8th to the 15th for the Corey variety, in rows 4 feet apart and hills 2 feet apart, putting in eight or ten kernels to a hill, and covering not over 1 inch deep. Some plant by hand, but much of the planting is done with the Planet Jr. No. 5. Spinach is sown between the rows of corn.

As soon as the spinach is harvested a thorough cultivation with the plow and cultivator is given, and the corn thinned to three or four plants in a hill and hoed. The corn is hilled or ridged up at the second hoeing, and all of the cultivation given with the horse cultivator, running it through the rows as often as once a week until the corn is in silk.

About the 1st of July, when the corn is in silk, the ground is thoroughly wet down and celery set between the rows. This watering makes a sure thing of the corn crop, hastens maturity and improves the quality of the corn. Corn treated in this way will produce a crop worth from $150 to $200 per acre, and should mature from July 20 to 25.

The Crosby corn can be grown in the same way and with the same combination, to a good profit. It matures from July 25 to August 1.

By succession planting sweet corn may be had every day from July 20 to October 20. Plant April 8 to 20, then May 10, and every two weeks until July 1. It is not safe to figure on a good crop from any seed sown as late as July 10, but often we get corn from seed sown as late as July 17. If the corn fodder is of good size the ears will fill out considerably after being cut by a hard frost. The large number of ears which will mature after a hard frost will greatly surprise one.

Sweet corn is sometimes started in pots in a greenhouse or hotbed, and then hardened off and set in the field. By this system sweet corn may be had ready to market by July 7.

Some market gardeners raise a little of the yellow varieties of sweet corn, but the market demand for them up to this time is very limited. Golden Bantam and Ordways Yellow seem to be the most popular, the latter having the larger ear.

Tomatoes.

This is a crop most easily grown, a great money producer and usually very satisfactory. We need to have good plants, of good variety and set early in order to get the best returns. No one who cultivates an acre of tomatoes should be satisfied until he is able to raise and sell a crop which will make a gross return of $900 per acre. The average returns are not over $400 per acre.

There are many varieties of tomatoes to select from. Often some local variety or strain will be found most profitable. The writer has found Sparks Earliana, Chalks Jewel and Stone three very satisfactory varieties. The Earliana comes large and early, and will make a very heavy crop before the price goes off. Chalks Jewel is also a heavy cropper, very smooth, a good second early variety and a good money maker. The Stone is no better than Chalks Jewel, but is a little later and possibly a little larger plant. The Earliana is well adapted to growing on rich land and is a good market-garden variety.

To get good plants start them by February 22 in a hotbed, and transplant as soon as the second leaves appear. Keep growing with plenty of air, to make sure of a stocky plant. About the middle of April transplant to a hotbed with mild heat, say 4 to 6 inches of manure, and set the plants 50 plants to a sash. In a few days go over the beds and nip out the growing top of every plant, so as to make the side shoots appear. This nipping will cause several branches to start, and when the plant is ready to set in the field there will be from three to five branches, and all in bloom, or with fruit on, and the plants will stand fully 15 inches high.

In preparing the field for tomatoes plow deeply and harrow and level. Furrow out deeply one way and cross mark the other. Set

the plants down deep and hoe in the manure around each plant as set. Manuring in the hill is very satisfactory with tomatoes. Plants of Earliana should be set 3 by 4 feet, Chalks Jewel 3½ by 5 feet and Stone 4 by 6 feet.

If the season is one when the vines make a rank growth they should be carefully spread out over the hill or ridge. If they continue to grow rank cut back the tops with a grass hook. Tomatoes like cultivation, heat and water. Stir the ground often, ridge the soil up to the plants and water if you can. Water will increase the size and improve the quality of the crop. Tomatoes like a piece of new or sod land, and always seem to mature earlier on that and are usually smoother. Training tomatoes on a trellis or tying them to stakes is a method of raising largely practiced on some farms, and is considered very profitable. The fruit is much smoother and brighter and brings a higher price under this system.

Lettuce.

This is a crop most easily grown and is very profitable when the market price is high. It is easily spoiled with too much manure and water, too great heat or hail storms. Lettuce will not head if too little manure and water are present, however good the temperature may be. When the weather conditions are unfavorable only the best gardeners have lettuce to sell. The land for lettuce should receive about 30 cords per acre of fresh manure every year in early spring. This manure must be well plowed in. I would not hesitate to plow in manure at any time in the year if I thought the land needed it to carry a crop.

Lettuce is very hardy, and may be sown as early in March or April as the soil can be made ready. Early sown seed needs to be barely covered, but later sowings may be covered about ½ inch deep. Germination will be found most complete when covered only ¼ inch, but it is not so easy to maintain the moisture condition favorable to the crop with so small a covering late in June or July. The first sowing should give the first heads fit to sell by June 10.

Lettuce may be had in the open by May 20 if care is taken to raise the plants in a hotbed and set out in the field about April 10, when well hardened. The seed for such plants should be sown about February 20 in a hotbed, and the young plants set over about March 1, putting 200 plants under each sash. Use plenty of water when transplanting lettuce in the open. In the early spring season choose a warm, bright day, when there is no wind, as the most favorable weather conditions will make a great difference in the growth of the lettuce plants. A few warm days right after setting will give the plants a good start, and then they will stand a little hard weather. Many people think there is an advantage in transplanting lettuce to

make it head. There is no such advantage. Proper amounts of manure and water and favorable weather conditions are the most important factors.

When a crop of lettuce is well spread out, covering the ground, and the ground is dry, it should be thoroughly wet down, using as much as 2 or 3 inches of water. Put this water on at night by use of some irrigation system like the Skinner system. Do not water lightly or at midday, as the lettuce is liable to burn in either case.

Lettuce will head very rapidly under favorable conditions and a crop come off in a week to ten days. For succession crops I have followed this system: plant as early in the spring as possible. Make the next sowing May 1, and then sow every ten days until June 20. From June 20 to August 4 I like to sow once a week. Never expect to make a profit or get a crop from lettuce seed sown later than August 4. Varieties for open-air culture are listed under many names. A good strain of Black Seed Tennis Ball is the best all round lettuce I have ever raised. Other varieties are tried, but I find this the best.

Lettuce to grow well under glass should be of a variety especially adapted to glass.

The profits from lettuce vary immensely from year to year, and from one season to another in the same year.

Spinach.

This crop is used to fill space between rows of corn, beans and tomatoes, and is often planted in a field by itself. The ground must be very rich to produce early spring spinach. The manure should be well rotted, and manure from piggeries seems particularly adapted to growing spinach. Cow manure is also first class for fall spinach. A small amount of manure may be assisted by using 200 to 300 pounds of nitrate of soda or sulfate of ammonia per acre. The nitrogen fertilizers will give the spinach a deep green color. They are most satisfactory when used in conjunction with manure.

Spinach should be sown thickly in the row, and the rows should be about 6 or 7 inches apart for the earliest spring sowing, using 25 to 40 pounds of seed per acre. Later sowings should be with less seed in the row.

Spinach is wanted in the market up to the middle of July, and then the demand drops off. About September the demand begins again and increases up to November. Succession plantings can be made from the earliest opportunity in the spring until June 15, and from July 20 and every week thereafter until September 12 for fall and winter use.

There is a leaf miner which is liable to spoil spinach, but when in the egg stage it is easily seen, and the crop may be sold while yet

unharmed. If the leaf miner spoils the crop plow it under and try again. Do not be satisfied in growing spinach until you have secured a crop of 2,000 or more bushels per acre.

To get the best fall spinach the seed should be sown rather thinly, and if the plants stand too thickly they should be thinned to stand 2 inches apart. Great large-leafed spinach can thus be obtained, which will bring double the money received for ordinary spinach. A small application of nitrate of soda to late fall spinach will keep it from turning yellow.

To winter over spinach in the field sow on well-drained land, rather thickly, from September 1 to 12. When cold weather comes, and in any event by December 1, cover with sedge, straw or fine boughs, for the winter. In early spring, March or April, remove the covering, and treat with sulfate of ammonia, hoed in. Spinach will live over on some land with no protective covering. It will be found a profitable crop for most market gardens.

SERIES OF 1911. VOL. 24. NO. 5.

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MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF SEPTEMBER, 1911.

SOME OF THE ESSENTIALS OF BEEKEEPING.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary.*

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

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The State Board of Publication.

Crop Report for the Month of September, 1911.

Office of State Board of Agriculture,
Boston, Mass., Oct. 2, 1911.

This Crop Report for the month of September is No. 5 of the series for the current year. Reasonably accurate estimates of the probable value of farm crops, frost damage, etc., can now be made, making this bulletin of particular interest. The special article for this issue is on "Some of the essentials of beekeeping," by Burton N. Gates, Ph.D., State Inspector of Apiaries. We have had numerous calls for some article giving practical instruction in the details of bee management and handling, and this article fills the demand as far as is possible in the limited space allowed. It may at some future time be expanded into a special bulletin on bee management, of more bulky proportions. Professor Gates is a practical beekeeper of considerable experience, besides being well posted on the scientific side of the industry. His work in inspecting the apiaries of the State has also given him a remarkable opportunity to acquaint himself with the conditions surrounding beekeeping in Massachusetts and the possibilities for development of the industry.

Progress of the Season.

The Crop Reporting Board of the Bureau of Statistics of the United States Department of Agriculture, in Crop Reporter for September, 1911, give their estimates as to acreage and condition of the principal farm crops of the country in the following table: —

Crop.	Condition September 1 (Per Cent).			Condition Aug. 1, 1911 (Per Cent).	Acreage, 1911.	
	1911.	1910.	Ten-Year Average.		Per Cent of 1910.	Acres.
Corn,	70.3	78.2	79.3	69.6	101.7	115,939,000
Winter wheat,	–	–	–	–	106.6	31,367,000
Spring wheat,	56.7[1]	63.1[1]	78.7[1]	59.8	104.9	20,757,000
All wheat,	68.8[1]	61.7[1]	79.1[1]	–	105.9	52,124,000
Oats,	64.5[1]	83.3[1]	79.5[1]	65.7	99.9	35,250,000
Barley,	65.5[1]	69.8[1]	83.0[1]	66.2	97.0	7,038,000
Rye,	–	–	–	–	96.7	1,962,000
Buckwheat,	83.8	82.3	87.1[1]	82.9	97.0	801,000
Potatoes,	59.8	70.5	78.9	62.3	97.3	3,495,000
Tobacco,	71.1	77.7	82.3	68.0	72.4	893,200
Flax,	68.4	48.3	81.8[2]	71.0	103.3	3,013,000
Rice,	87.2	88.8	88.3	88.3	97.6	705,700
Hay,	–	–	–	68.6	94.1	43,017,000
Apples,	56.2	46.8	52.6	53.9	–	–

[1] Condition at time of harvest. [2] Eight-year average.

The yields indicated by the condition of crops on Sept. 1, 1911, or at time of harvest, the final yields of 1910, and the averages for 1906–1910, follow: —

Crop.	Yield per Acre.			Indicated Total Production, 1911, compared with Total Production (Per Cent) in —	
	Indicated by Condition 1911.	Final, 1910.	Average, 1906-10.	1910.	Average, 1906-10.
Corn (bushels),	23.60	27.40	27.10	87.5	97.1
Winter wheat (bushels),	14.50[1]	15.80	15.50	98.1	101.1
Spring wheat (bushels),	9.80	11.70	13.50	87.9	83.6
All wheat (bushels),	12.60	14.10	14.70	94.7	95.0
Oats (bushels),	23.90	31.90	28.40	74.8	90.4
Barley (bushels),	20.30	22.40	24.80	88.1	85.9
Rye (bushels),	15.60[1]	16.30	16.40	92.9	94.6
Buckwheat (bushels),	19.60	20.90	19.60	91.1	98.8
Potatoes (bushels),	74.20	94.40	96.90	76.5	81.0
Tobacco (pounds),	714.60	797.80	826.00	64.8	79.1
Flax (bushels),	7.70	4.80	9.90[2]	164.4	99.0
Rice (bushels),	32.10	33.90	32.40	92.4	105.5
Hay (tons),	1.09[1]	1.33	1.41	77.0	74.0

[1] Preliminary estimate of yield. [2] Averages for 1905–09.

Preliminary returns indicate a hay yield of about 1.09 tons per acre, or a total of 46,969,000 tons, as compared with 60,978,000 finally estimated last year, and 63,507,000 the average annual production in the past five years. Quality is 90.3, against 92.5 last year, and a ten-year average of 91.1.

For the country at large the condition of other crops September 1 was as follows: peaches, 44.3; grapes, 84; pears, 64; alfalfa, 86.6; Kafir corn, 74.4; millet, 69.5; watermelons, 80.2; cantaloupes, 78; cranberries, 78.1; oranges, 88; lemons, 94.8; sweet potatoes, 79.1; tomatoes, 74.8; cabbage, 68.6; onions, 74.7; beans (dry), 81.5; Lima beans, 89.4; broom corn, 63.5; hemp, 61; hops, 88.3; sorghum, 77.9; sugar cane, 92; sugar beets, 89.9; peanuts, 80.4.

In Massachusetts the average condition of corn was 89; of oats, 90; of buckwheat, 89; of stock hogs, 99; of tobacco, 85; of potatoes, 67; of apples, 67; of peaches, 69; of grapes, 90; of pears, 82; of millet, 89; of watermelons, 89; of cantaloupes, 85; of cranberries, 82; of tomatoes, 83; of cabbage, 82; of onions, 71; of beans (dry), 86; and of Lima beans, 81.

Temperature and Rainfall for the Whole Country.

[From United States National Weekly Weather Bulletin.]

Week ending September 4. — The average temperature for the week was below the normal from the southern Plains region northeastward to New England, and over the Lake region and upper Mississippi valley, and there were also small areas on the Pacific coast where the weekly means were below normal, but nowhere were the negative departures marked. Over the immediate Gulf coast, south Atlantic States, the Missouri valley and the entire Rocky Mountain and Plateau regions the temperatures were above the normal. The total rainfall for the week exceeded 2 inches over the greater part of the Atlantic coast States from Florida to southern New England, extending westward to and including the Appalachian region. Amounts near 1 inch occurred in the lower Lake region and at a few points in the Missouri and Mississippi valleys. Elsewhere there was generally but little rain.

Week ending September 11. — The mean temperature of the week was above average from the middle and southern Rocky Mountain region eastward to the Atlantic. From New England westward over the northern tier of States to the

Rocky Mountains the average temperature was below the normal, and also in practically all districts west of the Rocky Mountains, except along the immediate Pacific coast from California northward, where it was normal or slightly above. For the week as a whole the precipitation was probably the most generous and widespread of the season to date, nearly all portions of the great agricultural sections east of the Rocky Mountains as far east as New England receiving amounts ranging from 1 to 2 inches, while considerable areas had in excess of 2 inches, with occasional amounts exceeding 4 inches. Over the middle and southern portions of the Rocky Mountain, Plateau and Pacific coast States the week was mostly without precipitation.

Week ending September 18. — The mean temperature for the week continued above the normal over the interior and southern districts, the week, as a whole, being an unusually warm one in the Plains region, the Mississippi valley, and over the Gulf States, where the average excess ranged from 6° to 12° per day. The week was generally cold in New England, and it was cool in the Middle Atlantic States, lower Lake region, southern Florida and over large portions of the Plateau and Pacific coast States. The total precipitation of the week was light over large portions of the country. In the middle Mississippi valley, Lake region and Ohio valley the total fall for the week ranged very generally from 1 inch to slightly more than 2 inches, with occasional amounts exceeding 4 inches. From the Rocky Mountains westward there was a very general absence of precipitation, and over the remaining portions of the country, except for small areas, there was a very general deficiency in precipitation.

Week ending September 25. — For the week as a whole the temperatures continued above the normal over the southern districts, and it was warmer than usual over all the eastern portion of the country, the greatest positive departures, ranging from 6° to 9°, extending from central Texas northeastward to the interior of New England. From the upper Mississippi valley westward to the Pacific the temperatures were almost continuously below average. The total precipitation

for the week was, as a rule, unusually light, amounts exceeding 1 inch occurring in the South Atlantic States, in the middle Mississippi valley, small areas in the Gulf States and at a few points in other districts, while elsewhere the precipitation was in the main deficient.

Special Telegraphic Reports.

[Weather Bureau, Boston.]

Week ending September 4. — New England. Boston: Copious and heavy rains fell throughout the section the first half of the week, being of great benefit. Temperatures were moderate and seasonable. Conditions now are very favorable.

Week ending September 11. — New England. Boston: Temperature and precipitation were generally normal and seasonable, but sunshine was deficient. The ground is well saturated. Fair weather with sunshine will make excellent conditions.

Week ending September 18. — New England. Boston: Freezing temperatures Wednesday and Thursday nights destroyed all growing crops affected by frost throughout the interior of the section, causing great damage. There was much cloudiness the last of the week.

Week ending September 25. — New England. Boston: Generally seasonable weather, with occasional light showers, prevailed. Conditions were favorable throughout the week.

The Weather of September, 1911.

The weather of September was very near the average of the season, the departures from the normals being slight in both temperature and precipitation. Also, there were no unusual extremes in the several elements of the daily weather condition of the month. The day temperatures rose above 80° on a number of days, but the nights were moderately cool, generally ranging in the 50s, making the average temperature of the month about the normal for September. Fairly well-distributed light to moderate rains were reported from nearly all sections, so that the monthly amounts did not vary greatly from the seasonal average. A few local

storms of marked violence occurred, but there was an entire absence of prolonged heavy storms that are fairly characteristic of the month. Sunshine was less prevalent than usual, overcast skies without rain prevailing on a number of days. Fogs were a common feature of the weather, though not of unusual frequency. There was little weather of the dog-day type, and, generally speaking, the month was very pleasant. A heavy frost about the 16th and 17th did considerable damage to late crops, but otherwise the weather was very favorable to maturing crops and to harvesting, to fall plowing and to cultivating, and to pasturage. The season was considered near the average at the close of the month.

Publications.

The only publications in September were the August Crop Report, with an article on "Growing Beans, Corn, Tomatoes, Lettuce and Spinach," and a list of publications for distribution, revised to September 1. The edition of the former was quickly exhausted and is no longer available. A copy of the latter will be mailed to any applicant therefor.

Domestic Animals, Poultry and Bees on Massachusetts Farms.

The first preliminary summary of statistics relative to the domestic animals, poultry and bees on farms in Massachusetts, collected at the thirteenth decennial United States census, April 15, 1910, by Census Director Durand of the Census Bureau, is presented below. Special attention is called to the fact that the present statement relates only to live stock on farms, and does not give the figures for the cities and towns of the State.

Summary — Domestic Animals, April 15, 1910.

Age and Sex Group.	Farms reporting.		Animals.		
	Number.	Per Cent of All Farms.	Number.	Value.	Average Value.
Total,	32,055	87.8	–	$19,201,342	–
Cattle,	27,513	75.4	252,357	9,346,341	–
Dairy cows (cows and heifers kept for milk, born before Jan. 1, 1909),	27,174	74.4	171,893	7,814,216	$45 46
Other cows (cows and heifers not kept for milk, born before Jan. 1, 1909),	6,284	17.2	20,093	512,276	25 50
Heifers born in 1909,	9,483	26.0	24,580	420,069	17 09
Calves born after Jan. 1, 1910,	9,529	26.1	25,571	167,200	6 54
Steers and bulls born in 1909,	2,479	6.8	4,834	114,821	23 75
Steers and bulls born before Jan. 1, 1909,	3,196	8.8	5,386	317,759	59 00
Horses and colts,	28,134	77.1	64,233	8,667,137	–
Mares, stallions and geldings born before Jan. 1, 1909,	28,097	77.0	63,111	8,571,593	135 82
Colts born in 1909,	709	1.9	948	86,054	90 77
Colts born after Jan. 1, 1910,	121	0.3	174	9,490	54 54
Mules and mule colts,	155	0.4	268	43,385	–
Mules born before Jan 1, 1909,	149	0.4	259	42,905	165 66
Mule colts born in 1909,	5	–[1]	5	365	73 00
Mule colts born after Jan. 1, 1910,	3	–[1]	4	115	28 75
Asses and burros (all ages),	20	0.1	22	1,827	83 05
Swine,	10,998	30.1	102,913	978,399	–
Hogs and pigs born before Jan. 1, 1910,	9,203	25.2	62,313	809,063	12 98
Pigs born after Jan. 1, 1910,	3,901	10.7	40,600	169,336	4 17
Sheep and lambs,	1,027	2.8	32,669	156,303	–
Ewes born before Jan. 1, 1910,	946	2.6	20,887	111,015	5 32
Rams and wethers born before Jan. 1, 1910,	429	1.2	1,785	13,888	7 78
Lambs born after Jan. 1, 1910,	699	1.9	9,997	31,400	3 14
Goats and kids (all ages),	200	0.5	1,240	7,950	6 41

[1] Less than one-tenth of 1 per cent

Comparative Summary — Poultry, 1910 and 1900.

Kind.	1910 (April 15).				1900 (June 1)
	Farms reporting.		Number of Fowls.	Value.	Number of Fowls.
	Number.	Per Cent of All Farms.			
Total,	28,154	77.1	1,798,385	$1,493,436	1,680,693
Chickens,	28,018	76.7	1,709,934	1,402,977	1,625,269
Turkeys,	692	1.9	2,645	8,729	3,018
Ducks,	1,888	5.2	23,153	23,255	46,017
Geese,	896	2.5	12,313	26,867	6,389
Guinea fowls,	812	2.2	4,446	3,548	–[1]
Pigeons,	948	2.6	44,830	24,310	–[2]
All other,[3]	7	–[4]	1,064	3,750	–[2]

[1] Included with chickens.

[2] Not reported.

[3] Pheasants, $3,200; swans, $475; peafowls, $75.

[4] Less than one tenth of 1 per cent.

Number and Value of Colonies of Bees.

The number of farms reporting bees decreased from 1,799 in 1900 to 1,597 in 1910, or 11.2 per cent. The colonies of bees on hand in 1910 showed a decrease from 8,381 in 1900 to 7,464, or 10.9 per cent, and the value increased from $35,800 in 1900 to $39,700 in 1910, or 11 per cent. The number of farms reporting bees and the number of colonies decreased at about the same rate, while the per cent of increase in value was proportionally as great. Over 4 farms in each 100 reported bees both in 1910 and in 1900.

Summary of Crop Conditions.

In the circular to correspondents, returnable September 23, the following questions were asked: —

1. How does the crop of Indian corn compare with a normal crop?

2. Are the rowen crop and fall feed up to the usual average?

3. Has the usual amount of fall seeding been done, and what is its condition?

4. How does the onion crop compare with a normal crop?

5. How do potatoes compare with the normal in yield and quality?

6. What is the prospect for root crops, celery and other late market-garden crops?

7. How have apples, pears, peaches, grapes and cranberries turned out?

8. Has there been injury from frost, and, if so, to what extent and on what dates did it occur?

Returns were received from 125 correspondents, from which the following summary has been compiled: —

Indian Corn.

What gave fair promise of being one of the heaviest corn crops for years was very seriously damaged by the frosts of the 13th, 14th and 15th of September. Some strains had matured sufficiently so that the grain will be of value, but

many others had not reached that point, and the stover is generally severely injured. Ensilage corn suffered more than that intended for grain, as it was not as far advanced in most instances, and the feeding value of the ensilage has been very greatly impaired. Very little corn was cut in advance of the frosts, either for the silo or for grain.

Rowen and Fall Feed.

Rowen was a very short crop before the rains of September, and while it has improved it can be called only a light crop at the best. Some of it is being cut late where none was expected. Much of that already cut has suffered damage from rain while curing. The rains have brought fall feed along well, and it is generally in much better condition than usual, both in pastures and mowings. The rains have also had an excellent effect on pastures and mowings so far as the prospects for another season are concerned.

Fall Seeding.

Considerably less than the usual amount of fall seeding has been done for the State as a whole, owing to dry weather during August, rains during September, pressure of other work and the high price of grass and clover seed. This latter factor is mentioned by several correspondents, but as there is no immediate prospect of lower prices, owing to the poor condition of the hay crop this season, it would not seem wise to defer seeding for that reason. The condition of that put in is generally said to be good, as it germinated well, owing to the rains, and has been kept growing from the same cause.

Onions.

Onions are a very light crop in all sections, especially in the Connecticut valley, where the bulk of the crop is grown. They are small in size, but generally well matured and of good quality. Prices have been unusually high, so far as reported. The drought was the principal cause of the short crop, though there was some damage from maggots and thrips.

Potatoes.

Potatoes are a very light crop in almost all sections. They are reported as being small and few in the hill, and there is some rot, though it is by no means generally prevalent. The quality, where the crop has escaped the rot, seems to be excellent in almost all cases. We desire to again impress upon our farmers the necessity of spraying potatoes as faithfully as fruit trees should be sprayed, if the rot and other fungous diseases are to be escaped. As with onions, drought seems this year to be the principal cause of the shortage.

Root Crops, Celery, etc.

Root crops are generally said to be in good condition. The recent rains have brought them forward very rapidly. There is some complaint of poor stand, due to faulty germination, but this is by no means general. Celery promises well, so far as reported on, though there are some reports of decreased acreage. Other late market-garden crops generally promise well, having come forward with the rains of the month. Warm weather and sunshine are needed to mature them.

Fruit.

Apples are a light crop in most sections, and for the State as a whole will be under half a crop. The drop has been very severe in many sections and they also did not set well. The quality is excellent where they have been sprayed, but, as always when the crop is short, the quality of the unsprayed fruit is below the normal. Pears are generally abundant, and the crop of peaches is larger than usual. Grapes were a heavy crop and were generally gathered in advance of the frost. Cranberries are a light crop on the Cape, and suffered considerable damage from frost in Plymouth and Bristol counties, although the Cape Cod correspondents report that their towns escaped.

Injury from Frosts.

Frosts on the 13th, 14th and 15th of September did a great deal of damage throughout the State, cutting corn,

vegetables, vines and in fact all tender vegetation. Cape Cod appears to have escaped damage, and the damage was less severe than elsewhere in Bristol and Plymouth counties. Corn for the silo suffered especially. More or less tobacco was caught unharvested, the wet weather having delayed harvest, and that caught out was ruined for all practical purposes. Considerable damage is also reported in the market gardens of the eastern part of the State. Most crops were backward, which accounts for the unusual damage suffered from a frost that did not come at an unusually early date.

NOTES OF CORRESPONDENTS.

(Returned to us September 23.)

BERKSHIRE COUNTY.

New Marlborough (E. W. Rhoades). — There is a full yield of corn, but it is of poor quality, owing to frost damage. Feed in pastures continues good and rowen is fair in meadows. The ground is in fine shape for fall seeding, although not much has been done. Potatoes yield about half a crop, but the quality is extra good. Late garden crops are good, especially cabbages. Pears and grapes are full crops; apples not very plentiful. There was a hard frost on the morning of September 14th.

Tyringham (E. H. Slater). — Indian corn will not produce over 85 per cent. of a normal crop. Rowen and fall feed are up to the usual average. Fall seeding is in good condition. Only a few onions are raised in this vicinity. Potatoes are not over 65 per cent of the usual crop, but are of good quality. Only a few market garden crops are raised here. Apples have not turned out as well as usual; grapes are a large crop. The frost of September 14 was very severe and did a great deal of damage to corn, especially to that for the silo.

West Stockbridge (J. S. Moore). — Indian corn is a full crop of good quality. Continued rains have been very beneficial, and rowen and pasturage are better than usual. There is about the normal amount of fall seeding, and it is in good condition. Potatoes are of good quality, but light in yield. Root crops are not raised to any extent. The apple crop is good and of good quality where sprayed; pears abundant; other fruits not raised. September 14 the frost did much damage. Our farmers are giving more and more attention to dairying, and are fairly well satisfied with the conditions.

Richmond (Timothy B. Salmon). — Indian corn is above the average. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, and it is in good condition. Potatoes are small and there is some rot. Root crops are in good condition. There are large yields of apples and pears, but few grapes and peaches. Frost on the 13th and 14th injured corn, potatoes and other late crops.

Washington (E. H. Eames). — Indian corn is about half a normal crop. Rowen and fall feed are up to the usual average. No fall

seeding has been done as yet. Potatoes are three-fourths of a normal crop and of good quality. Apples are about a three-fourths crop; other fruits not grown for market. Frost on September 13 destroyed all tender vegetation.

Peru (F. G. Creamer). — There is a good crop of corn. Very little rowen was cut this fall, and fall feed is not up to the usual average. Very little seeding has been done, owing to dry weather. Potatoes are about half a crop. There is half a normal crop of apples. Last week's frost spoiled a great many late gardens.

Cheshire (L. J. Northup). — The early frost was a set-back to a full crop of Indian corn. Rowen and fall feed are not up to the usual average. Not much, if any, fall seeding has been done in this locality. The yield of potatoes is off 40 per cent from the normal, but the quality is good. Root crops and other market-garden crops are normal. Apples are half a crop; pears good; grapes fine. The severe frost killed all tender crops.

Williamstown (S. A. Hickox). — Some of the early varieties of corn matured before the frost of the 13th, but the others, including ensilage corn, were much injured. Rowen and fall feed are in poor condition. Less than the usual amount of fall seeding has been done and it is in poor condition. Potatoes are about 60 per cent of a normal crop. The prospect is good for root crops, celery and other late market-garden crops.

FRANKLIN COUNTY.

Charlemont (J. M. J. Legate). — Indian corn is below the average owing to drought and frost. Rowen and fall feed are below the average, although feed has started since the rains. Less than the usual amount of fall seeding has been done, grass seed being very high in price. Onions are not over half a crop in the Connecticut valley. Potatoes were injured by the frost, which will reduce the yield and injure the quality. There is a very short crop of apples. The mercury was down to 25 on the morning of the 13th, and killed everything that was not frost proof; there had been very little corn cut when it came.

Buckland (Eugene D. Griswold). — Corn is about a normal crop. There is very little rowen, owing to dry weather. Nearly the usual amount of fall seeding has been done, and it is in very good condition. Onions are little raised, and the yield is below the average. Potatoes are from 50 to 75 per cent of a normal crop in yield, but are of good quality. Late market-garden crops are little raised, but are in normal condition. The fruit crop is below the normal, but of good quality. Corn, millet, garden crops and a little tobacco were killed by frost on the morning of September 14.

Colrain (W. H. Davenport). — Corn is an especially good crop

as to grain, but ensilage corn was very badly cut by a severe frost on September 14. Pastures look well now after the rains, and quite a crop of short rowen is being cut. About the usual amount of fall seeding has been done and it is in good condition. Potatoes are light in yield but of good quality. Apples dropped badly and the crop is light.

Conway (L. T. Hopkins). — Indian corn is about 75 per cent of a normal crop. Rowen and fall feed are below the average owing to dry weather. About the usual amount of fall seeding will be put in and the early sown looks well. Potatoes are half a crop, but of No. 1 quality. Apples are a light crop; pears good; grapes heavy. The frost of the 14th caught most corn uncut, and the fields are now white; about one-fifth of the acreage of tobacco was uncut, and some have plowed it under while others have harvested it.

Whately (C. L. Crafts). — Corn is about an average crop. There is no rowen or fall feed. No fall seeding has been done to amount to anything, the price of seed being so high as to discourage it. The onion crop is about 30 per cent of the normal in yield, but of good quality and they have sold well. Potatoes are about half a crop of good quality. Apples are half a crop; pears, peaches and grapes 100 per cent. The heavy frost of September 14 killed everything. Perhaps 10 per cent of the tobacco acreage was uncut; corn had not been cut at all, owing to the wet weather, which made tobacco harvest three weeks late.

Sunderland (Geo. P. Smith). — Indian corn is 90 per cent of a normal crop, being injured by frost. There is very little rowen, but fall feed is fair. The usual amount of fall seeding has been done and looks well. Onions are a light crop, and while some are good in quality, others are green and late. Potatoes were a very small yield for early fields, but the late ones are better matured. The prospect is only fair for late market-garden crops. Apples light; pears good; some grapes. The tobacco crop was much injured by frost on the 14th, some 50 acres being destroyed.

Montague (A. M. Lyman). — Indian corn is about a two-thirds crop. Rowen and fall feed are not more than half the usual average. Onions are not over half a crop, and are undersized. More fall seeding than usual has been done, and it is looking well. Potatoes run small, hardly half a crop, but of good quality. The prospect is good for root crops, celery and other late market-garden crops. Apples are about half a crop, and the sprayed fruit is of good quality. The frost of the 14th injured corn severely, and destroyed one-fourth of the tobacco crop and much garden stuff.

New Salem (Daniel Ballard). — Corn would have been about normal, but was much injured by frost. Recent warm rains have brought rowen and fall feed forward to nearly average condition. About the usual amount of fall seeding has been done, and is in

good condition. Onions are about a normal crop. Potatoes are below the normal in both yield and quality. Root crops, celery and other late market-garden crops are not much raised. There was a very light frost on September 13 and a heavy one on the 14th, cutting corn, potatoes, late gardens, beans and sweet corn, in fact all crops.

HAMPSHIRE COUNTY.

Greenwich (Walter H. Glazier). — Indian corn would have been a good crop, but much of it suffered from frost. There is very little rowen, but fall feed is in fair condition. But little fall seeding has been done. Potatoes are light in yield and of fair quality. Root crops and late market-garden crops are not grown to any amount. Apples are hardly a normal crop; other fruits not grown. On the morning of September 14 a severe frost did much damage, nearly all corn being still uncut.

Pelham (John W. Knight). — Indian corn is a very good crop. Rowen and fall feed are light, as the rains did not come until late. There has not been much fall seeding done. What onions there are raised here are good. Potatoes are not more than half a crop, of poor quality. Apples are a small crop; pears, peaches and grapes good. There was a hard frost on September 14, which injured corn fields and killed vines.

Hadley (H. C. Russell). — Corn was growing well until the frost damaged it. Rowen is a short crop, and fall feed fair. The usual amount of fall seeding has been done, and is in good condition. Onions are about two-thirds of an average crop. Potatoes are a very poor crop of poor quality. Apples and grapes are fair crops. A frost on the 14th seriously damaged tobacco, corn and garden crops.

South Hadley (W. F. Person). — Corn is a good crop. Rowen is a light crop. Fall seeding is about the same as usual in amount, and is looking well. Onions are less than an average crop. Potatoes are a small yield of poor quality. All root crops are good. Apples are a small crop, also pears; grapes good. A very hard frost on the 13th cut most everything in this section.

Easthampton (Wm. C. Clapp). — Indian corn is hardly up to the average. There is a light crop of rowen, and fall feed is about as usual. The usual amount of fall seeding has been done and is looking well. Onions are not a heavy yield. Potatoes are not a normal crop, being few in the hill, but are of good quality. Root crops and celery promise well. Apples are a light crop; pears and grapes plenty. The frost of September 13 injured corn and all other crops not matured.

Southampton (C. B. Lyman). — Corn was a full average crop, but damaged by frost. Rowen is about one-third of a full crop;

owing to recent rains fall feed is fully up to the average. About the usual amount of fall seeding has been done, but it is later than usual. But few onions have been raised, and they are not up to the normal. The prospect is very fair for root crops, celery and late market-garden crops. The apple crop is generally light, but pears are a good crop. Potatoes are about half a crop, being small and few in the hill. There was a severe frost on September 14. Tobacco was mostly cut before the frost, but one grower lost 1½ acres.

Chesterfield (Horatio Bisbee). — Indian corn is a good crop, although the fodder is frostbitten. Rowen is not up to the usual average, but fall feed is fairly good. Very little fall seeding has been done. Potatoes are a light yield, but the size and quality are good. Apples are rather a light crop, but pears are very good. The frost injured all crops on September 14.

Plainfield (C. A. Williams). — Indian corn was fully an average crop until the freeze. Rowen and fall feed are not nearly up to the average. There has not been as much fall seeding done as usual, but it is looking well. Not many onions are raised, but what few there are have done well. Potatoes are a light yield, but the quality is good. Root crops are fair, and other garden crops are good. Apples are an average crop, but other fruits are light. On September 13 a hard frost did hundreds of dollars worth of damage to corn and other crops, very little corn having previously been cut.

HAMPDEN COUNTY.

Blandford (Enos W. Boise). — Indian corn is proving a full crop. Rowen is a poor crop, and fall feed is fair, but not up to the normal. A small amount of fall seeding has been done, and is looking well. Potatoes show a good yield of extra quality. Root crops and late market-garden crops promise to be about average. Apples are half a crop; pears, peaches and grapes are full crops; cranberries a three-fourths crop. Frosts September 13 and 14 killed vines, and on the hills did some damage, but were not general.

West Springfield (T. A. Rogers). — Corn is fully up to the normal. Rowen is less than a normal crop, but fall feed is good. About the usual amount of fall seeding has been done, and it is looking well. Onions are perhaps 60 per cent of a normal crop. Potatoes are of good quality and perhaps about half a normal crop. Celery is late, but is looking well; other market-garden crops normal. Apples dropped badly; peaches good; grapes normal. A hard frost the morning of the 13th hurt all crops.

Agawam (J. G. Burt). — Corn is a good crop, above the normal. There is no rowen, but fall feed looks well. More fall seeding than usual has been done, and it is looking well. Onions are about a

normal crop. There is a very light yield of potatoes, but the quality is good. The prospect is good for root crops. Apples, pears and grapes are good crops; other fruits light. Corn and tobacco were badly injured by frost on September 13.

East Longmeadow (John L. Davis). — Dry weather stopped the growth of ears on Indian corn, and it is frostbitten. There is no rowen or fall feed. Late planted potatoes are a fair crop, while early planted ones are a failure, with some rot. Apples and pears are fair crops; peaches few; grapes plenty. Celery and other late market-garden crops have had a poor outlook, but are now improving.

Wilbraham (H. M. Bliss). — Indian corn is 95 per cent of a full crop. Rowen and fall feed are not over half of the normal. Less than the usual amount of fall seeding has been done, and it is not in good condition. Onions are 85 per cent of a normal crop. Potatoes are a very poor crop. Root crops and other late market-garden crops are from two-thirds to three-fourths of normal crops. Apples are 75 per cent of the normal; pears, 60; peaches, 90; grapes, 95; cranberries, poor. Corn fodder was badly cut by frost.

Chicopee (E. L. Shaw). — Indian corn is about normal, except on late fields, where frost stopped the growth. Rowen is about a two-thirds crop; fall feed good. Seeding is doing finely, though there has not been a large amount done. Potatoes are much below the normal in yield and quality. Root crops are doing well; celery fair; frost has damaged other vegetables. Apples are good; pears fair; grapes plenty. Frost on September 13 damaged all vines and stopped the growth of corn.

Palmer (O. P. Allen). — Indian corn is about a three-fourths crop. Rowen and fall feed are not up to the usual average, owing to drought. Not as much fall seeding as usual has been done, but the recent rains have improved the late sown. Potatoes are about a two-thirds crop, and are not up to the normal in quality. Root crops are mostly grown for home use. Apples are less than usual in yield; pears and grapes plenty. Much injury has been done by frost, especially to late planted corn.

WORCESTER COUNTY.

Southbridge (E. T. Torrey). — Corn is good this year, better than normal. Rowen is about 90 per cent of a normal crop, but fall feed is excellent. About the usual amount of fall seeding has been done, and is good condition. The potato yield will be about 80 per cent of the normal, and worms are working badly. Apples, pears and peaches are about average yields, and grapes are better. On September 13 we had a very severe frost, with much damage to late vegetables, vines, etc.

Charlton (Loren E. Stevens). — There is the usual crop of Indian corn. Rowen and fall feed are not up to the usual average. On account of dry weather at the time for seeding little fall seeding was done. The yield of potatoes is small and the quality is good. All fruit was of good quality and plenty, except apples, which are scarce. Slight frosts on September 13 killed vines and injured corn. The work of filling silos is being rushed.

Brookfield (Frank E. Prouty). — Indian corn is about a two-thirds crop. There will be but little rowen cut, but fall feed is gaining rapidly. About the usual amount of fall seeding has been done and it looks well. Potatoes are not over half a crop. Celery looks well. Apples are about half a crop; peaches a good crop; grapes good; pears about two-thirds crop. Quite a few fields of mangels and root crops were killed by the dry weather, and the fields sown to millet and barley. A hard frost cut everything September 14.

Oakham (Jesse Allen). — Corn is about a two-thirds crop, greatly injured by drought and frost. There is no rowen, but fall feed is quite abundant. The usual amount of fall seeding has been done and looks well. Potatoes are about half a crop, of excellent quality. There will be a very small crop of fruit. September 13 and 14 severe frosts greatly injured corn and late vegetables.

Barre (J. L. Smith). — Indian corn is below the average. There is no rowen, but fall feed is very good. The usual amount of fall seeding has been put in, and that sown late looks well. There are very few good yields of potatoes. Root crops and late market-garden crops are not grown. There is a small crop of apples, but they look well. September 13 there was a severe frost, injuring corn, late potatoes and all garden truck.

Petersham (B. W. Spooner). — The corn crop is about normal in this vicinity. There is quite a good crop of rowen, and pastures are holding out well. No fall seeding has been done. Potatoes are are of good quality, with no rot, but are few in the hill. The heavy rains have helped root crops, celery and other late market-garden crops. Apples are scarce, pears plenty, few peaches. September 14 a damaging frost injured vegetables.

Royalston (C. A. Stimson). — Indian corn is small and immature. Rowen is a two-thirds crop. Less than the usual amount of fall seeding has been done, owing to drought, and is not in good condition. Potatoes are small and few in the hill. Root crops and late market-garden crops will be light yields. Apples are half a crop; pears and grapes full crops. Everything was killed by frosts on September 13.

Fitchburg (Dr. Jabez Fisher). — The rowen crop is small as yet, but is improving, and fall feed is good. Potatoes are a small yield, but of good quality. Root crops, celery and other late market-

garden crops are looking fairly well. Fruits are generally of good quality, but crops are small, except grapes and peaches. A light frost on the 14th killed melon and squash vines.

Sterling (Henry S. Sawyer). — Corn is a three-fourths crop. Rowen has greatly improved since the rains, but is not up to the average. About the usual amount of fall seeding has been done, and is looking well. Potatoes are of good quality, and 50 per cent of a normal yield. Root crops and late market-garden crops are looking well and growing since the rains. There is promise of a good crop of apples, pears and grapes. Vines were injured by frost on September 12 and 13, also corn to some extent.

Shrewsbury (Fred J. Reed). — Indian corn is far below a normal crop. Rowen has started a little since the rain. The usual amount of fall seeding has been done, and is in very fair condition. Onions are a very light crop owing to the dry summer. Potatoes are below the normal in yield and of fair quality. The prospect is not good for root crops and late market-garden crops. Apples, pears and peaches are light, and grapes good. There was a very heavy frost which ruined all late crops.

Auburn (Wm. Gilbert). — Corn is a normal crop, but the late corn and that grown for the silo was damaged by frost. Rowen is about 30 per cent of a crop, and fall feed is good. There is more than the usual amount of fall seeding, and it is looking well. Most onions were so poor that they were plowed under. Potatoes are less than half a crop, of good quality. Roots and all market-garden crops show light yields. Apples are a light crop; pears and peaches about normal. The frost has done a great deal of damage to all crops. There was a light frost on the night of the 12th, and a heavy one on the 13th.

Mendon (J. J. Nutter). — Indian corn is not quite up to the normal. Fall feed is fully up to the average. Potatoes are much below the average, but are of good quality. The prospect for root crops, celery and other late market-garden crops is about as usual. There is half a crop of apples; pears and peaches good; cranberries light. Frost has done great injury in some sections.

MIDDLESEX COUNTY.

Hopkinton (W. V. Thompson). — Indian corn is a little off in condition because of dry weather. Rowen and fall feed are not up to the usual average. Not much fall seeding has been done as yet, as after the rains and frost there was too much rush work. Potatoes are hardly 50 per cent of a normal crop. Root crops and late market-garden crops look well. Apples are half a crop; pears plenty; peaches fair; grapes a fine crop; cranberries extra good. The frost on the night of September 13 froze peaches, melons, toma-

toes and everything in sight. The silo corn was white, and our gardens ruined.

Sudbury (E. W. Goodnow). — The corn crop was light and damaged by frost. Fall feed and the rowen crop are up to the normal. The usual amount of fall seeding has been done, but owing to the dry weather is not looking well. The onion crop is below the normal. The potato crop is light. Root crops and late market-garden crops are looking well. Apples, pears, grapes and cranberries have turned out well. The frost of September 13 did considerable damage.

Stow (Geo. W. Bradley). — Indian corn is about two-thirds of an average crop and was considerably injured by frost. Rowen is very nearly up to the normal. There has been but very little seeding thus far. Potatoes are of fair quality, but not more than half a yield. The prospect is not very encouraging for root crops, celery and other late market-garden crops. Apples, pears and peaches are fair crops; grapes and cranberries hurt by frost. Almost everything was killed by the frost of the 13th and 14th.

Dunstable (A. J. Gilson). — Indian corn is badly frozen, otherwise it would have been a good crop. Rowen and fall feed are good crops. Considerable fall seeding is being done about this time. Potatoes are below the normal in yield, but of very good quality. Root crops that the frost did not injure will be good. A very light crop of apples, pears and peaches; grapes and cranberries good where gathered before the frost. Nearly all kinds of farm produce have been badly frosted by a light frost on the mornings of the 13th and 15th, and a severe one on the 14th.

Chelmsford (W. B. Bullock). — Indian corn is an average crop. Rowen and fall feed are below the average. A good deal of fall seeding has been done, and it is looking very well. Potatoes are a light crop of good quality. Root crops and late garden crops are looking well. Apples are a light crop, but of very good quality; other fruit quite plenty. There was a frost on September 13, which did a great deal of damage to late corn, tomatoes and cranberries.

Billerica (E. F. Dickinson). — A three-fourths crop of corn is in sight. Rowen is variable, on the whole a half crop; fall feed good. Less fall seeding than usual has been done, and that put in looks well. There is a poor showing for onions this season. Potatoes are unusually small, few and poor. Root crops and late market-garden crops are nearly up to the average. Apples are half a crop; pears and peaches good; cranberries light. There was heavy frost on the morning of September 14, with serious damage to all tender vegetables. One man estimates his loss at $2,000, and a Lexington market gardener sets his at $3,000.

Concord (Wm. H. Hunt). — Indian corn is below the normal. Rowen is better than promised, but below the normal. There is about the average amount of fall seeding, and it is not quite up to

the average in growth. Onions are a fair crop. Potatoes are of fine quality, and the yield below average. Late market-garden crops are looking well. Apples uneven; pears, grapes and peaches fair. On September 13 there was a heavy frost that took all tender foliage, such as vegetables, sweet corn and ensilage corn.

Winchester (S. S. Symmes). — Rowen and fall feed are up to the usual average. Onions are about 50 per cent of a normal crop. Potatoes are a small yield, but of very good quality. Celery will be a good crop, and root crops promise well. Pears are a fine crop, and apples light. There was frost on September 13, 14 and 15, and on the 14th the ground was frozen and all perishable vegetables destroyed. Cauliflowers have not headed well. The acreage of celery is only about one-half that of last season.

Stoneham (J. E. Wiley). — Rowen and fall feed are not up to the usual average. Fall seeding is in good condition, and the usual amount has been done. Potatoes are a small crop, of poor quality. The prospect is good for celery, root crops and late market-garden crops. Apples are a heavy crop; pears and grapes good; peaches heavy. There was quite a heavy frost on the night of September 13, but the damage was not as great as at first thought.

Newton (G. L. Marcy). — Indian corn is a good crop. Rowen and fall feed are not up to the usual average. Fall seeding is in good condition. Onions are not grown to any extent. Potatoes are a poor yield. The prospect for fruit is fair. There was a heavy frost on the night of September 13, which cut everything that could be damaged by frost. Tomatoes protected by vines escaped.

ESSEX COUNTY.

Salisbury (Wesley Pettengill). — Indian corn is a good normal crop, and the grain is not injured much by frost. Rowen is nearly up to the average, and fall feed is fully up. Not as much fall seeding has been done as usual, but that put in is looking finely. Potatoes are a very light yield, but the quality is fine. There will be a large crop of fall apples, and a fair crop of winter apples; pears good; peaches and grapes fair. There was a light frost on the morning of September 13 and a heavy one on that of September 14, which did considerable damage to squashes, tomatoes, late beans and some damage to corn.

Amesbury (F. W. Sargent). — Corn is but little below the average. Rowen and fall feed are good, recent rains keeping them growing. The usual amount of fall seeding has been done, and it is starting well. Onions are 75 per cent of a normal crop. Potatoes are half an average crop. Celery is in poor condition, and other crops fair. Apples are a short crop; peaches and grapes fair. A severe frost on the morning of September 13 did much damage.

Groveland (A. S. Longfellow). — Indian corn is very green and will give less than an average yield. Rowen and fall feed are not up to the usual average. The usual amount of fall seeding has been done and is in very good condition. The yield is below the average, and the quality good. Root crops, celery and other late market-garden crops are looking very well. Pears and peaches are a full crop, and there are some apples. There was much injury from frost September 14 and 15.

Rowley (D. H. O'Brien). — Indian corn is below the normal. Rowen and fall feed are below the average. Very little fall seeding has been done. Nearly all the onion crop was destroyed by the onion maggot. Potatoes are half a normal yield, of poor quality. Root crops are fair and late, market-garden crops quite good. Apples are half a crop; pears fair; peaches and grapes good; cranberries poor. There was a severe frost on September 15, doing a great amount of damage.

Topsfield (B. P. Pike). — Indian corn was badly frostbitten and is below the average. Fall feed is good, but rowen is late and below the average. About the usual amount of fall seeding has been done; though it is late it is looking well. Potatoes are of fair size and few in the hill. Root crops and late market-garden crops have grown well, but are poorly stocked. Apples are uneven; peaches and grapes fair; cranberries badly injured by frost. September 14 there was a heavy frost.

Hamilton (George R. Dodge). — On account of early frost the crop of sound, well-matured ears of corn will be materially lessened. Late summer and fall rains have brought the rowen crop and fall feed nearly up to the average. Some fall seeding has been done recently, but it is not yet ready for report of condition. Some fields of potatoes on low ground have given normal crops, but they are generally below. Root crops were slow in germinating and made an uneven stand. Apples are abundant in well cared for orchards; pears and grapes plentiful; peaches fair; no cranberries. Serious damage from frost occurred about two weeks ago; late sweet corn, tomatoes, beans, squashes and all vine crops suffering.

NORFOLK COUNTY.

Cohasset (Ellery C. Bates). — Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and is in normal condition. Onions are less than a normal crop. The prospect is good for root crops, celery and other late market-garden crops. The prospect is good for fruit. There was injury from frost on September 14.

Canton (Edwin V. Kingsley). — Indian corn is an average crop. Rowen made a surprising gain and is a two-thirds crop; fall feed

was never better. The usual amount of fall seeding has been done and it is in A1 condition. Onions are a short crop. Potatoes as a whole are not above 70 per cent of a normal crop, though the later planted ones are very good, with no blight. The prospect for root crops, celery and other late market-garden crops is very good, should say 100. Apples, pears and grapes very good crops; very few peaches. A very heavy frost on the morning of the 14th damaged corn for silos 33 per cent at least, destroyed squashes, beans, melons and cucumbers, and injured late potatoes.

Millis (E. F. Richardson). — Indian corn is better than a normal crop. Rowen is short and fall feed good. The usual amount of fall seeding has been done and is in good condition. Onions are less than two-thirds of a normal crop. Root crops are good, and other market-garden crops poor. Potatoes are about a two-thirds crop. There is about a three-fourths crop of fruit. There was a very severe frost on September 13.

Norfolk (A. D. Towne). — Ensilage corn is better than an average crop. Rowen and fall feed are up to the usual average. Fall seeding is in fine condition, and two-thirds the usual amount has been seeded. Potatoes are a normal crop in yield, but some fields are rotting badly. Apples are light; pears good; peaches and grapes full crops. Severe frost on the 14th badly damaged corn, millets and all tender fruits and vegetables.

Franklin (C. M. Allen). — Indian corn is 90 per cent of a full crop. Rowen was a poor crop where cut early, but late rowen is very good. Very little fall seeding has been done. Potatoes are a three-fourths crop in yield, but not over 10 per cent off in quality. Root crops and late market-garden crops look promising. Apples are a poor crop; pears, peaches and grapes good crops; cranberries injured by frost. There was quite a good deal of injury from frost.

BRISTOL COUNTY.

Easton (Wm. N. Howard). — Indian corn is a good crop. Rowen has been advanced rapidly, and much has been cut and damaged by rain; pasturage excellent. Fall seeding is late by reason of rainy weather. The yield of potatoes is below the average and of good quality. Turnips, beets, carrots and parsnips are in good condition. Apples are a heavy yield; some pears and grapes; cranberries fair. Frost has done considerable damage. Heavy foliage on squash protected the crop, which is now being gathered.

Mansfield (E. Jasper Fisher). — Corn is not quite an average crop. Fall feed is in good condition, but there is very little rowen. There is about the usual amount of fall seeding, and it is in good condition. Potatoes are light in yield and of good quality. The prospect is very good for root crops and late market-garden crops.

With the exception of cranberries fruits promise very well. Hard frosts on the 13th and 14th did much damage to corn, tomatoes, grapes and cranberries.

Foxborough (Wm. E. Perkins). — There was the prospect of a fair crop of corn, but many fields were damaged by frost. Rowen and fall feed are not up to the usual average. The usual amount of fall seeding has been done and it is in good condition. Potatoes are a light yield of fair quality. The prospect is fair for root crops and late market-garden crops. There is a fair crop of fruit. September 13, 14 and 15 heavy frosts cut corn, millet, squash and pumpkin vines.

Seekonk (John W. Peck). — Corn is mostly grown for the silo. Rowen is about a three-fourths crop, and fall feed is in excellent condition. The drought hindered early seeding, but many are seeding now. Onions are not over 60 per cent of a crop, and are small, but sound and of good quality. Medium to late potatoes are from 50 to 60 per cent of a normal crop. The prospect is fairly good for root crops and late market-garden crops. The prospect is very good for all fruits. The frost of the 14th killed most cucumber and squash vines, but did not injure tomatoes, peppers or corn to any extent.

Dighton (Howard C. Briggs). — Indian corn is below the average. The rowen crop is larger than usual and is in fine condition. The usual amount of fall seeding has been done and is in average condition. Onions are very little raised. Potatoes are half a crop of good quality, with no rot. The prospect is good for root crops, celery and other late market-garden crops. Apples are a heavy crop; also grapes; other fruits average. Frost came on September 14 and killed corn and all tender vegetation.

Acushnet (M. S. Douglas). — Indian corn is about a two-thirds crop. Fall feed is very good and rowen about one-third of the average. Very little fall seeding has been done as the rains came late. Potatoes are about half a normal crop of average quality. The prospect is very good for root crops, celery and other late market-garden crops. Apples are more than a normal crop; pears scarce; grapes and peaches fair. Hard frost on September 13, but very little damage was done.

PLYMOUTH COUNTY.

Norwell (Henry A. Turner). — The crop of Indian corn is about normal. There is a pretty good crop of rowen, but fall feed is rather short. Fall seeding is looking well. Potatoes are small and about half a normal crop. Turnips are looking well, though small for the time of the year. Apples, pears and grapes and cranberries are good crops. There has been very little injury from frost.

Bridgewater (Clinton P. Howard). — Corn is a good crop but

very late, and the frost on the 13th nearly spoiled the fodder. Very little rowen will be put in this fall. Not as much fall seeding as usual has been put in and it is looking better than usual. Potatoes are a two-thirds crop, but the quality is not of the best. There will be large yields of all kinds of fruit. There was a very hard frost on September 13.

Halifax (Carrie A. Hayward). — Indian corn is a fair crop but slow in ripening. Rowen and fall feed are extra good. More fall seeding has been done than usual and it is looking well. Onions are a poor crop. Potatoes are of good quality, but the yield is light. There will be a good crop of all kinds of fruit. Frost has spoiled the corn fodder, but did little other damage.

Kingston (George L. Churchill). — Corn is rather better than usual. Rowen and fall feed are up to the usual average. Fall seeding is in very good condition. Onions are not as good a crop as usual. Potatoes are below the average in yield and of poor quality. The prospect is very fair for root crops, celery and other late market-garden crops. Fruit, except cranberries, is very good. There was frost on the 14th and 15th, but not much damage was done.

Lakeville (Nathaniel G. Staples). — Indian corn is rather below the average. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and is looking very well. Onions are not up to the normal. The yield of potatoes is not more than 60 per cent of the normal and the quality is very good. The prospect is fair for root crops, celery and other late market-garden crops. Fruits are fairly up to the normal in yield. There was some damage from frost on September 13.

Rochester (Geo. H. Randall). — Corn is about 80 per cent of a full crop. Rowen and fall feed are below the average, but are growing rapidly now. No fall seeding has been done. Onions did not come up well. Potatoes are a two-thirds crop of good quality. There is no celery grown; turnips are a fine crop. Fruits are full average crops. Frost did considerable damage to cranberries on September 13, 14 and 15.

BARNSTABLE COUNTY.

Falmouth (D. R. Wicks). — Indian corn is about a normal crop on moist land. Rowen and fall feed are fully up to the average. Not much fall seeding has been done, owing to the frequent rains. Potatoes are half a crop of poor quality. The prospect is good for root crops and late market-garden crops. The fruit crop as a whole is not over one-third of the normal. There has been no damage from frost.

Barnstable (John Bursley). — Corn is 90 per cent of a full crop. Rowen is light and fall feed very good. The usual amount of fall seeding has been done and is in very good condition. Potatoes are 60 per cent in yield and 90 per cent in quality. Cape tur-

nips are growing very rapidly. Apples and pears are very plentiful; peaches and grapes very good. There has been very slight damage from frost. Cranberries are a fair crop and are being harvested as rapidly as the wet weather will allow.

Dennis (Joshua Crowell). — Corn is about an average crop. Rowen is not quite up to the average, but fall feed is good. About the usual amount of fall seeding has been done and is in good condition. Onions are much less than a normal crop. Potatoes are of good quality and rather less than average in yield. The prospect is fair for root crops and late market-garden crops. Apples are about half a crop; grapes plenty; cranberries a two-thirds crop. Early cranberries were much below expectations, and are mostly picked; late berries will come nearer estimates but are much below an average crop.

Brewster (Thos. D. Sears). — Rowen and fall feed are above the usual average. Fall seeding is looking well, and there has been the usual amount put in. The onion crop compares favorably with a normal crop. The potato crop is rather light, but of good quality. The prospect for root crops is good. Apples, pears and cranberries are turning out better than was expected. There has been no damage from frost.

Eastham (A. L. Nickerson). — The crop of Indian corn is very nearly normal. The rowen crop is short in this section. Practically no fall seeding is done here. Potatoes are a smaller crop than usual, but of good quality. Turnips, our principal crop, are looking well. The apple crop was very small and not of the best quality; pears plenty and good. There has been no frost yet to do any damage. Grapes have been very plenty and of good quality. Cranberries are about a normal crop of the usual quality.

Truro (John B. Dyer). — There is an average crop of Indian corn, but it is not much raised. The late rains have helped rowen and fall feed greatly. Not much fall seeding has been done, but that put in is in good condition. Onions are an average crop. Potatoes are an average crop. Winter turnips look well, as do other late crops. Apples are a good crop, except Baldwins; pears, peaches and grapes good; cranberries greatly below the normal. There has been no damage from frost.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — The corn crop is rather below the normal. The rains came late for rowen, but fall feed is above the average. Not much fall seeding has been done here. Onions are not raised here to any extent. Potatoes are much below the normal. The prospect is very good for root crops, celery and other late market-garden crops. Fruit of all kinds is above the normal. There has been no injury from frost.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

SOME OF THE ESSENTIALS OF BEEKEEPING.

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INTRODUCTION.

This bulletin is not intended to be comprehensive of all beekeeping, but rather a guide to some essentials, adapted to the beginner, the avocational or the family beekeeper. Since Massachusetts already has an extremely large number of apiarists who keep only a few colonies, the special demands of the industry suggest the need of greater expertness, efficiency and larger beekeeping. There is also opportunity for better distribution of apiaries. For instance, some localities are entirely destitute of bees, while others possess a considerable number. To be sure, some localities — Worcester County and the Berkshires — are more profitable than others, but greater earnestness and efficiency will result in general and greater productivity.

THE OUTLOOK.

The opportunity for beekeeping and the prospect for profit are encouraging. With the suppression and control of infectious bee diseases, which in recent years have caused inestimable loss and discouragement, a new life for the industry is inevitable. Moreover, the Commonwealth is small and markets are especially accessible. There is a dense and growing population, and the fact that it is composed partially of Europeans improves the demand for honey. The utilization of bees in horticulture, orcharding, market gardening and cranberry culture is fast becoming more thoroughly understood and practiced. Encouragement, organization of the beekeepers for the exchange of ideas, demonstrations and protection, — all these promise to further a wholesome and fundamentally important industry.

To the majority, beekeeping is mysteriously fascinating, so that "once a beekeeper, always a beekeeper," is almost proverbial. It

affords recreation, a pastime for those in confining professions. It cannot be too strongly emphasized, however, that bees *require attention,* and this at precisely the proper time. They respond in proportion to judicious manipulation. Thus, neglect means failure and disappointment. In contemplating beekeeping, unless willing to properly and promptly care for the colonies, the prospective beekeeper had better not undertake the venture. Perhaps the best qualities which a beekeeper acquires are punctuality and precision.

Massachusetts is suited to Beekeeping.

Any county in the Commonwealth will support bees, even sandy Cape Cod reporting profitable returns. Beekeeping in the heart of a city can hardly be expected to yield as handsomely as in the country, but even in the city it is possible for a colony to maintain itself. Apiaries of some considerable size are found on roofs of business blocks in most of the large cities in the country. Preferably, however, for the greatest results, the apiarist should know his flora, the plants which yield nectar, their abundance and their periods of bloom. Then an apiary can be intelligently located. A garden plot or an acre of clover or buckwheat does not necessarily mean big returns in honey. Bees forage on a radius of at least two miles.

Locating the Apiary.

In commercial honey production, the selection of the apiary site receives deliberate consideration. Shelter from prevailing winds, a relatively level spot, upland and not swamp, remoteness from stock or pedestrians, aside from the general consideration of the honey-producing flora or bee forage, are important. The matter of shade versus no shade in the apiary has attracted considerable attention, but without proving the advantage of one over the other. On the whole, bees thrive best in the open, but the hives should then be protected by shade boards or ventilated covers, in order to overcome the melting down of the combs or sulking or "hanging out" of the colony in excessive heat. It is usually thought that in the open bees fly earlier and perhaps gather more nectar than when colonies are under trees. Too dense shade, which results in dampness, is to be avoided.

Usually an effort is made to turn the entrances of hives from driving winds, and apiaries frequently face the rising sun or the south, and seldom the north or northwest. Stone walls, sheds, hedges, forests and orchards make good windbreaks. The old custom of building sheds open on one side, under which to keep the colonies, has been largely abandoned. Such sheds hinder the easy and proper manipulation of the hives. Arranged in groups or rows, slightly elevated from the turf, in order to overcome dampness and the in-

trusion of pests, the colonies may more easily be attended to than if shelved. Grass and weeds should not be allowed to obstruct the entrances.

Materials for Maintenance.

Manufacturers present a large variety of hives and other equipment from which the beekeeper is to choose his type of hive and the accessories. Not everything advertised is necessary for a small apiary. It is advised that hives and fixtures be purchased, rather than made at home, at least for a start and a pattern, in order to secure accuracy of measurements and interchangableness of parts. Nothing is more annoying than to have misfits. For a similar reason the advisability of selecting and continuing one type of hive, say the ten-frame Langstroth, cannot be too strongly emphasized. The prospective keeper of bees should secure a collection of supply catalogues, study them, gain acquaintance with their technicalities, and then, selecting the type of hive most to his liking, purchase an equipment. Few parts and simple construction are features to be sought. The disadvantage of the old-fashioned box hive being so apparent to any one contemplating beekeeping to-day, it is scarcely necessary to say that only equipment with movable frames or combs should be considered.

Aside from the body of the hive, in which the frames are hung and the brood raised, hence called the brood chamber, there is a bottom board, with entrance for the bees, super or upper body in which surplus honey is stored and removed, and a cover. The bottom board is recommended to be of 7/8 inch stock, in order to secure rigidity, and should have a full width entrance. Those which are reversible, giving both a shallow and a deep entrance, are good. Most of the super types on the market to-day will serve. The purchaser must determine what the nature of his honey product is to be, then select his super, remembering to look for simplicity of construction. For a cover, the writer has been particularly pleased with metal roofed covers, consisting of a thin, inner board and a telescoping, metal-roofed outer cover. This is ventilated, water proof, ridged and durable. There is no danger of overheating the bees when it is used.

In order to prevent the queen from going above to lay in the supers, or compartments where the surplus honey is stored, a thin board, with perforations which permit the passage of worker bees but prevent that of the queen, is desirable. This is termed a queen-excluding board. The modern wire construction is admirable. A similar board in which is fitted a metal device, the Porter bee escape, when placed beneath the super, will allow the bees to pass from this surplus compartment but not return. Thus the honey can be removed with little labor. It is spoken of as a bee-escape board.

Selecting the Type of Hive.

The majority of beekeepers, especially large commercial producers, use the Langstroth hive, invented in 1851. This may contain eight or more frames, the present preference being for the ten-frame capacity. Furthermore, it is desirable to secure the new, 16¼-inch dimension hive body, permitting the use of ten frames and a division board, which follows after and confines the frames.

The Use of Foundation.

Experience shows that too few beekeepers, in this State at least, appreciate the advantage of using foundation, which is merely a basis for the construction of regular and perfect combs. Foundation is composed of pure beeswax; it is not artificial comb. It is merely a sheet of wax in which the shape and dimensions of worker cells are impressed. Foundation, when given to the bees, is drawn out by them and elaborated into perfect, even, working combs, without which it is almost impossible to obtain them. In naturally built comb there appears to be a well-defined tendency in the bees to construct a high percentage of drone cells. An excess of drones in the hives is to be guarded against. A further and important advantage is that each comb, constructed on full foundation in frames, may be removed without damage to itself or the adjoining ones. Remember, too, that according to various estimates, from 10 to 20 pounds of honey are consumed by bees producing 1 pound of comb.

Of course, it is essential to use but a half-inch strip of foundation in the tops of the frames when treating for disease, but the combs constructed can be removed later and full sheets of foundation substituted.

Beekeepers are urged to use full foundation whenever possible; it will prove economy in the long run.

Other Equipment.

In so old a State as Massachusetts it hardly seems possible that any one should attempt to maintain bees without a smoker. It is an indispensable instrument, without which, at times, most bees cannot be handled. Buy a strong, modern smoker, of good capacity and standard pattern. They cost less than a dollar and will serve for years.

The beginner in beekeeping should not brave the attacks of his bees by failing to use a veil. Cloth veils, made of cotton tulle, or the wire-constructed Muth pattern, if properly worn, are bee proof and comfortable. The supply merchants also furnish inexpensive gloves, which not only protect the hands but give a beginner added confidence.

In order to pry apart fixtures and scrape away refuse propolis, a hive tool should be constantly at hand. This can be purchased at a small cost. An inflexible putty knife is admirable.

Other almost indispensable apparatus can be listed and studied from catalogues. For fastening foundation to the wires in the frames, see wire embedders. For securing foundation in the surplus honey boxes or sections, study foundation fasteners, some of the recent, inexpensive types proving admirable. A few queen cages, for introducing, are serviceable, but may be constructed at home. A German bee brush, some perforated zinc, feeders, Alley drone traps, honey boards and Porter bee escapes will all be used.

Getting the Bees.

Getting the bees is easy, but there are several necessary precautions.

Commence on a small scale for the first year and increase in proportion to experience. Increase swarms will come fast enough, and sometimes it is a serious problem to know how to prevent building up too large an apiary. Usually beginners find it desirable to have not more than three to five colonies. With a beginning in May, which is a suitable time of the year, frequently the apiary will have doubled by fall, giving in addition a surplus of honey.

The primary precaution, at present, in buying bees is that they be healthy or free from brood disease, a subject referred to under "Hygiene of the Apiary." The question immediately arises, "How am I to tell that the bees are not diseased?" It may be possible upon inquiry to purchase colonies which have been inspected and pronounced healthy. An experienced beekeeper can sometimes be procured to pass judgment. Furthermore, in case of doubt, if a sample of the brood be sent to the Bureau of Entomology, Washington, D. C., or to the writer, an examination will gladly be made.

A relatively safe way to secure bees is to take a clean and equipped hive to a beekeeper, instructing him to introduce a large, early swarm. This is an inexpensive means of securing a good, vigorous colony.

Colonies may sometimes be caught in the woods by setting out empty hives. Various baits are used. A hive previously occupied by bees is attractive to swarms, but this method of securing colonies as now practiced is objectionable, and should be discontinued in regions where brood diseases occur. Inasmuch as empty combs and sometimes honey are used as bait, there arises great danger of spreading infection through robbing. Beekeepers are, therefore, warned against a possibly unlawful act.

In purchasing a hive of bees it will be most advantageous to secure them in the movable-frame type of hive, which the prospective buyer should previously have selected as his standard. A beginner is advised not to purchase colonies in boxes, kegs or old-fashioned box

hives, which practice requires transferring the colony to a frame hive. This, while it affords excellent experience, is a handicap and is usually expensive.

Summing up the suggestions for a beginning: —

Purchase disease-free and strong colonies, preferably good Italians, and in the modern type of frame hive which has been decided upon. A good time of the year to commence is in the spring. If it can be arranged, allow an experienced beekeeper to attend to transportation, a problem which sometimes perplexes the veteran.

Italianize.

The various races, types, strains or varieties of bees, such as Carniolan, Banat, Caucasian, Cyprian, the African races, and some of the Italian strains have been much and often over-exploited. An eminent German authority has aptly said that the Americans are so anxious to try new races, they import so many strains, that they have no truly efficient, strictly American honey bee, which may be said to be characteristic of or adapted to any one locality of the United States.

In Massachusetts this is perhaps especially true, because of the many who keep bees from general, natural history or avocational interest. The serious beekeeper, however, in the Commonwealth, as elsewhere, prefers the Italian or "hybrid" (German black and Italian cross). Even among the Italian stock, which is widely admitted the best race, all purposes considered, there are varieties which are less desirable than others.

As a whole, Italians which are less susceptible to European foul brood are good honey producers, prolific, gentle, easily handled, not excessive swarmers, hardy and the bee for the professional. Massachusetts beekeepers are urged to Italianize, if for no other reason than the tendency of Italian strains to resist European foul brood. Generally, the so-called "leather-colored" Italian is preferred to what has been termed "golden" or the "light-yellow colored" types. If you find a good strain keep it and rear new stock from it.

With the slight labor of a few minutes spent in introducing a queen, colonies which are vicious, hybrid or unproductive, may be completely restocked and transformed in the course of a few weeks, since the life of a working bee is approximately forty days. Thus an undesirable race may be changed for prolific, gentle Italians.

Requeening.

The success of a honey crop depends upon young and vigorous bees, and their presence is now considered a most important factor in the elimination of swarming. The commercial apiarist would requeen at least once in two years, and often annually. By requeening in

August, the wintering ability of the colony is increased, the tendency to swarm the following spring is reduced, and productiveness and efficiency in the summer are secured.

Purchasing Queens.

Queens may be purchased from early spring (in the south) to late fall. Usually Massachusetts beekeepers can secure stock raised in the State, there being at least four commercial queen rearers. Queens so secured are mated, and, consequently, introduce new blood into the apiary. They are transported by mail in a small wooden cage which also serves as an introducing cage. Directions accompany each queen. Their trade classification is as follows: "Untested;" a mated queen but unproved, her progeny not having been matured. "Tested;" the purity of the mating of this queen has been proved by her progeny. "Select tested;" these queens are usually older, and have proved themselves prolific, truly mated, etc. "Breeding queen;" such queens are carefully selected for superiority and characters worthy of being propagated. The cost of queens increases proportionally to this classification. Usually a tested queen is satisfactory and a reliable breeder, and can be depended upon to furnish a high percentage of truly mated stock.

INCREASE.

Naturally, increase and dissemination of the species are accomplished by means of swarming, yet it is no longer considered an index of prosperity. In this thrilling event, the wildest and most exciting situation in all beekeeping, the parent stock, 20,000 strong, issues from the hive to form a new colony, leaving the brood and emerging bees, with queen cells and honey, behind, to continue the old one. The act of flying forth, the issuing of the bees with their parent queen, is called swarming. Eventually they find a new location and establish their new home. Thus one stock produces two, these two may give two more, and so the apiary grows.

Artificial or Controlled Increase.

The old way of securing more colonies was based precisely upon this natural behavior, — swarming. The beekeeper trusted to luck that his bees would swarm and not fly away. But experience has shown it uncertain. Usually the parent colony yielded little or no honey the year that it swarmed. Later, beekeepers commenced to divide their colonies, brood and bees, into two or more parts or nuclei, supplying each division with a queen or allowing the bees to rear and mate one. Gradually these small or nucleus colonies strengthen until fall, when they should become full size. But this means usually

affords merely increase. Moreover, these nuclei require considerable attention, nursing and feeding, which means little economy.

The modern methods of increase are based on an effort to keep strong both the old and the new colony, without sacrifice of the honey harvest.

Shaking for Increase.

This has virtue not only in increase but also in overcoming the swarming nuisance. The principle has many modifications and is commonly explained under heading of "shook" swarming. Here, again, the natural impulse of the bees to swarm is taken advantage of. A hive is prepared as for hiving a swarm, that is, an empty hive is equipped with frames containing either full sheets of foundation or foundation starters. This is set on the stand in place of the colony to be shaken. The readiness of the colony is determined by its preparations to swarm. A frame of sealed brood is set in the center of the new hive. The queen is then placed on this frame. A majority of the bees are next shaken from the combs in the old hive, which, when completed, will have stocked the new one on the old stand. The old hive, combs and the remaining bees (enough should be left to care for the brood) is set on a new stand. The newly formed colony will recover and build up rapidly, being almost immediately ready for supers, which should be placed over a queen-excluding zinc. This is done to prevent the queen from laying in the section boxes. The colony from which the bees have been shaken may be allowed to rear their new queen, or a cell, virgin queen or mated queen may be provided them, at the beekeeper's discretion. A laying queen, of course, builds up the colony more rapidly.

The experienced beekeeper can readily see how this procedure can be used to advantage in treating for brood diseases of bees. Of course, it is necessary to modify the method, using only half-inch starters of foundation (strips one-half inch in width), and omitting to put the sheet of brood into the new hive. The exchange of supers should also be avoided.

Another method, which is quite as satisfactory, is to establish a new colony by the removal of frames of hatching brood with adhering bees from several colonies. These, in a hive to which a queen is introduced, rapidly establish a thrifty colony without materially reducing the parent stocks. The force of bees can also be increased by substituting this newly formed colony on the stand of another strong colony and thus catching the returning field bees. The loss to the populous colony which was removed is slight. After moving the new colony in this way several times, remarkable increase in strength can be obtained. Such procedure, or the transferring of combs from hive to hive, in any case should be rigidly avoided in any apiary where the presence of brood disease is suspected.

The reader is also referred to the method recommended by the late E. W. Alexander, which is gaining much favor. This is virtually a modification of the "shook" swarming method, but without the shaking.[1]

Spring Management.

The honey harvest depends upon correct management of your colonies in the spring. Spring conditions depend upon success in wintering, and it is said wintering depends upon preparation the previous season. But with the first flight of the bees, when trees are beginning to swell their buds, the beekeeper's season commences.

Each colony should be thoroughly overhauled, provided, of course, that spring has really come. Opening colonies when bees are not flying should be avoided. A great deal of labor for the bees can be saved by scraping from the bottom boards the winter's accumulation of débris. At this season the beekeeper should scrape the top bars of the frames, remove surplus bee glue (propolis), that the parts may handle more freely during the rest of the summer. Also look for your queens, which sometimes fail to survive the hardships of winter. The presence of brood or eggs should be a guide. If there seems to be a failure of the queen, or if she is lost, a new one should be provided immediately, or else the rapidity with which the colony may dwindle will be surprising.

The honey stores, as the colony expands brood rearing, vanish almost mysteriously. Consequently it is imperative that provisions be constantly available. Remember, too, that very little nectar can be gathered in the field, since perhaps maple and skunk cabbage are the only flowers yet open. It is frequently desirable and necessary to feed. (See "Feeding.")

To know what to do with small or weak colonies is often a problem. They had better be united, a queenless one with a queenwright, some advise. To nurse along a weak colony means care, which is not always repaid by a surplus of honey.

E. W. Alexander has given a method of building up weak colonies in the spring. Those who have tried it do not all report it a success, but the writer's experience is favorable. Beekeepers should undertake it with caution, but nevertheless surprising results have been obtained.

According to Alexander, the apiary should be divided into an equal number of strong and weak colonies. Again, mark each of the weak colonies which has brood. Placing queen-excluding zinc over the strong colonies without disturbance, and, preferably, without smoke, set the weak colonies having brood over strong ones. It will be necessary to give a frame of brood to each of the weak

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[1] "A B C and X Y Z of Bee Culture," Root, 1910, pp. 284, 285. "Gleanings in Bee Culture," 1906, p. 423.

colonies having none. These may then be set upon strong colonies, in each case using a perforated zinc between the upper and lower hive, as before.

Alexander's caution is: "In every case where the method is reported a failure it has been from one of two causes, — either lack of brood in the weak colony, in order to hold the queen and her few bees in the upper hive, or smoking the strong colony so that, as soon as the weak one was set on top, the bees rush from below and sting every one above. Therefore, avoid using smoke or doing anything to excite the strong colony." The whole should be done so that neither colony realizes that it has been disturbed. In about thirty days each hive will be crowded with bees and maturing brood. Then, when you wish to separate them, set the strongest colony on the new stand.

A further spring duty is to clean up the apiary. As is explained under "Hygiene of the Apiary," on the first day that bees fly examine each hive and determine whether it contains a living colony. *Immediately,* close bee-tight any hive in which the colony has died; furthermore, remove the hives and contents to a bee-tight building. This is not only a wholesome practice to prevent robbing, but it is vital in order to check the spread of diseases. For a similar reason beekeepers are warned against *exposing any comb, honey or section* so that the "bees may clean it up," as is so thoughtlessly done.

Contraction of the entrance is a matter of judgment. As a general rule, never give more entrance than can be guarded by the bees within, and this is especially applicable in spring and fall. Entrance contraction as is erroneously and frequently thought, is not of so much importance in controlling ventilation as in reducing or preventing robbing.

Weak colonies benefit in the early spring by being outwardly protected. Outside cases of wood or paper coverings, used as winter protection, are of much service in early spring, when a high temperature must be maintained for brood rearing..

Feeding.

Usually, bees can exist without being fed extra stores. There are advantages, however, in judicious feeding. This may be accomplished in different ways and for different purposes. At present, as a general rule, it is not safe to feed honey, there being too grave danger of transmitting brood disease by it. On the whole, sugar is not only safer and more preferable but cheaper. When necessary, honey may be *diluted* with an equal amount of water, *boiled one hour* and fed.

Spring Feeding.

Usually, enough stores can be provided in the fall to last until a honey flow comes in the spring. Moreover, feeding is always stimulative to egg production and brood rearing. Consequently, when it is done in the spring a thin syrup made from the best granulated sugar, one part of sugar to two or even three parts of water, may be used. Small amounts, a pound or two daily, are usually sufficient.

Fall Feeding.

In the fall, the purpose being merely to supply winter stores, feeding is done as rapidly as possible. In considering the wintering problem, emphasis is placed on the necessity of ample and naturally stored supplies; therefore, feeding should be completed early in October. At this season there is no desire to stimulate, and a thick, saturated solution of granulated sugar is used.

How to Feed.

There are many devices on the market for feeding, most of them having merit and some particular convenience. They may be listed: Cary, Danzenbaker, Paige, division-board, pepperbox or Boardman (slow or small feeders), and Miller (a rapid feeder). These may be seen pictured in the catalogues. On the whole, an entrance feeder is to be avoided, since it excites robbing unless cautiously used.

Tin Pan Feeder.

This is perhaps the most satisfactory, inexpensive and sanitary feeder in use. A tin pan is filled with excelsior and placed in an empty super above the brood chamber. When filled with syrup, the excelsior affords a footing for the bees, so that few drown, drowning being an objection to some other feeders. Furthermore, dry sugar may be placed in the pan and merely dampened with water, supplying an excellent slow feed. When desired, the pans may be scalded and sterilized. There is no checking of the wood, nor breaking of glass; they telescope and pack away, and their cost is but 5 or 10 cents each.

Mixing Syrup.

Usually it is not necessary to boil syrup if mixed in advance and thoroughly stirred (an extractor is serviceable for 50 pounds or more of sugar). If hot water is used, it is an advantage. There are two precautions, however. Never feed scorched syrup, since it is fatal. There are cases, also, where feed has stood in galvanized tanks, as in an extractor, and has been found upon feeding to be poisonous to brood, especially in queen rearing.

Pollen Substitutes.

Whether we have yet found a substitute for pollen is a question. Some authorities advise placing bran, rye flour, pea flour and other similar materials where bees can gather them in the early spring. No objection or particular advantage in the practice can be seen.

Wintering.

One of the most formidable obstacles in the industry is wintering. Among those who practice the "let-alone" method of beekeeping, the mortality in winter and early spring is high. Unfortunately, no accurate studies of the best conditions for wintering have been made, yet failure may frequently be attributed to starvation, too small colonies as a result of late swarms, old queens which fail to survive or build up the colony in spring, or to the lack of a large population of young bees reared in the fall, which are to survive as workers the following spring.

Bees pass the winter in what may be termed a winter nest. They do not hibernate in the strict sense of the word, but cluster densely on the combs, maintain a relatively high and constant temperature, and consume honey for the purpose of heat production. Several months are sometimes passed without their leaving the hive, but upon the first calm warm day of spring, when the mercury reaches 45° to 50° F., they break clusters and fly forth, relieving themselves of excrement which they have retained rather than deposit in the hive. Having usually ceased brood rearing in October or early November, this is resumed in the spring, sometimes as early as February and usually in March.

Based on an understanding of normal conditions and behavior, it is evident that certain precautions by the beekeeper can materially further successful wintering. Perhaps the most important are plenty of provisions naturally arranged or stored early in the fall, and accessible to the cluster in winter; a large population of young, vigorous bees, reared late, which survive to become workers the following spring; a young prolific queen, preferably of the previous summer's rearing; and rational outward protection to the hive.

The methods of feeding are already discussed. This should not be delayed later than the first of October, to allow the natural and proper storage of the provisions. According to the size of the colony is the winter consumption. On the average, 35 pounds are consumed by colonies wintered out of doors, and bees, stores and hive fixtures should weigh approximately 50 pounds in the fall. Colonies light in naturally gathered provisions should be provided a balance of thick, fall-feeding, sugar syrup. Cellar-wintered colonies consume less than half as much provisions.

Normal, populous and provisioned colonies often do as well, or better, without packing and protecting. A common winter covering is the banking of a hive in straw, leaves or litter. An outer case, with an air space between it and the hive, has more merit. The air space is sometimes filled with insulating material, such as cork, shavings or chaff, but this practice is frequently considered by practical apiarists as the cause of too much condensation, and, consequently, dampening within the hive during long confinement. It must be recognized that within there is a living cluster of bees, actively transpiring and exhaling, which means that moisture is given off. If there is no escape it collects and runs down over the frames and bees. A cold night may later transform it into frost. The heat of the sun does not penetrate the excessive packing, thus there is refrigeration, rather than the desired conservation of heat. To be as near normal, natural conditions as possible, it would appear as though the much practiced and liked method of wrapping hives in paper is to be preferred. Newspapers, over which is laid a waterproof building paper (some prefer tar paper), are brought down and cleated to the hive in order to prevent blowing off. Through this by day the sun can warm and help dry out the hive, and by night the heat within is retained. If desired, previous to wrapping in paper an empty super may be set over the brood chamber. In this a sack of cork chips, dry leaves or shavings may be placed so as to act as an absorber for excessive moisture. Provision should be made, however, for the free passage of the bees over the tops of the frames and beneath the cushion by laying cleats crosswise on the frame top bars.

A common error is too great contraction of the entrance, which results in retention of moisture and ultimate mildew or mold on the combs. A strong colony had better have a full width (14 by ½ inch) entrance. Weaker colonies may profit by proportional contraction by means of blocks.

In some localities field mice cause considerable damage by building nests in the hives, gnawing and eating combs, pollen and dead bees. Access may easily be prevented by placing, early in the fall, a guard, composed of ½-inch mesh wire cloth, over the hive entrance, through which the bees pass readily.

Cellar wintering requires precision in care, some equipment and experience. In a large apiary Massachusetts beekeepers will benefit by successfully wintering 95 per cent, to 100 per cent. of their colonies. The cost of a cellar will soon be overbalanced by saving in stores consumed and in the loss of colonies sometimes attending outdoor wintering. Limited space and the fact that this paper is intended for smaller beekeepers suggest that details be consulted in "A B C and X Y Z of Bee Culture," Root, 1910.

Hygiene of the Apiary.

Brood Diseases of Bees.

American foul brood and European foul brood are the names of two distinct brood diseases of bees which until recently have had little consideration in Massachusetts, yet their prevalence is proved to be general, and to have caused inestimable losses to the beekeepers and horticulturists. No one problem in apiculture is more vitally important, and yet, when understood, the most gratifying results can be obtained by treatment. It is not a crime, as some have thought, to find colonies diseased. As conditions have been in Massachusetts, the presence of disease was expected almost anywhere. It should be considered more disgraceful to allow disease to remain unsuppressed, so great are the infection and damages. Moreover, it is being demonstrated for the first time in the Commonwealth that brood diseases can be checked, that the treatment is not so radical and burdensome as has often been feared, and that whole beekeeping communities are benefiting more than they had anticipated. The earnest co-operation of every beekeeper is solicited in the interest of promoting Massachusetts apiculture.

An adequate description of the diseases, how to tell them and how to treat them, could not be undertaken in this limited space. It may be said, however, that every beekeeper should examine his brood from time to time, especially in the early summer. Healthy brood in unsealed cells is of a pearly white color, and the larva, a grub or developing bee, is curled in the cell and plump. If you do not find this appearance, but there is a yellowish, grayish, brownish or blackish and more or less shapeless mass, decayed in the cells, or if the brood is irregular, the cappings discolored, sunken and perforated, there is reason to be suspicious. A colony which fails to build up, to hold its own, which does not respond to manipulation as it should, or one which dwindles early in the summer, affords reasons for being watched. The presence of the disease is not always apparent, unless a cell by cell examination is made.

The owner of bees should consider that it is his individual duty to watch and inspect his own colonies. While the State inspectors are endeavoring to visit the beekeeper, the progress of the work can be greatly furthered by the individual's efforts. Do not delay reporting to the State Inspector of Apiaries, Amherst, Mass., any case which is suspicious. A systematic effort will then be made, not only to assist the person so reporting and his neighbors, but to check and suppress the infection throughout the locality. In this way it has been possible already to clean up whole towns and even parts of counties.

If the reader has not obtained copies of the publications on this

subject, mentioned below, they will be sent gratis. They contain the information which beekeepers need in order to successfully combat brood diseases.[1]

General Hygiene.

In traveling among the beekeepers, the most urgent need for better sanitary conditions in the apiary have been found. This is not only true in districts where foul brood is being fought, but elsewhere, and even in the yards of beekeepers of long experience. This is partially due to the fact that it is no longer possible to practice some of the methods which were formerly considered wholesome and safe, and partially to the prevalence of diseases. Without attempting to elaborate, and, perhaps rather imperatively, but with the best intentions, the more important suggestions are made for bettering conditions in the apiary and in Massachusetts beekeeping: —

Try Italian stock.

Transfer colonies from box hives.

Keep the weeds and grass in the apiary down.

Try to keep your colonies always strong.

Use movable frames and do not nail these down.

Contract the entrances of any weak colonies.

Examine the brood in each colony at least two or three times in the early part of the season. Learn to look from cell to cell and into cells. Use a smoker and veil; own these.

The use of full sheets of foundation and wiring of the frames will be an advantage in most cases.

Immediately, as a colony is found dead, close the entrance and remove the hive to a bee-tight building.

Under no circumstances expose old combs, sections and the like where bees can visit them. There is no economy in it; there is danger of robbing and of disease.

Treat diseased colonies as soon as they are discovered. The longer the delay, the greater is the loss or labor.

Make sure that colonies have ample stores for winter. Give them early spring attention.

Keep only as many colonies as you can attend to.

Scraps of wax, bits of combs, should never be left in the apiary or out of doors, not even for an hour or so. Have a covered box, can or barrel which is bee-tight and indoors. It pays to accumulate the wax.

A limited space unfortunately excludes some fundamental pro-

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[1] "Brood Diseases of Bees, their Treatment and the Law for their Suppression in Massachusetts," Bulletin No. 1, Apiary Inspection, Massachusetts State Board of Agriculture. By Burton N. Gates, Ph.D., 1910. "The Treatment of Bee Diseases," United States Department of Agriculture, Farmers' Bulletin No. 442. By E. F. Phillips, Ph.D., 1911. A list of the other government publications on disease and bees may be found in the last-mentioned paper.

cedure which might rightfully find place in this bulletin, for which the beekeeper is referred to other publications.

"Swarm control," by no means satisfactorily settled, is, however, alluded to in considering requeening. "Handling and hiving swarms" is rather generally understood and discussed in most books. The time for "taking off surplus honey" may be said to be as soon as the honey is sealed or capped; yet beekeepers have individual preferences. "Increasing the honey crop" would be a profitable subject for consideration. These and other subjects could well comprise a bulletin. "The Production and Care of Extracted Honey" is treated by Dr. E. F. Phillips, Bulletin No. 75, Part 1, Bureau of Entomology, United States Department of Agriculture. The reader is urged to secure federal bulletins and to consult books and periodicals on beekeeping.

List of Bee Books.

General.

Comstock, Anna Botsford: "How to keep Bees."

Langstroth, L. L.: "Hive of the Honey Bee," 1853 (original edition); recent revised editions by Dadant.

Miller, Dr. C. C.: "Forty Years among the Bees," 1911 edition; "Fifty Years among the Bees."

Poetical, Literary and Historical.

Materlinck, Maurice: "The Hive of the Bee;" "The Swarm."

Morley, Margaret W.: "Bee People;" "Honey Makers."

Edwardes, Tickner: "The Lore of the Honey Bee."

Technical.

Root, E. R. and A. I.: "A B C and X Y Z of Bee Culture" (an encyclopedic work for specialists and experienced beekeepers, and the most comprehensive work in English).

Hutchinson, W. Z.: "Advanced Bee Culture."

Cheshire, Frank: "Bees and Beekeeping" (two volumes, practical and scientific, fast becoming out of date, but considered an important source book).

Von Buttel-Reepen, Dr. H.: "Are Bees Reflex Machines?" (translated from the German. All of this author's papers are exceedingly important from the scientific and even the practical standpoint).

Queen-rearing Papers.

Bulletin No. 55, Bureau of Entomology.

Phillips, Dr. E. F.: "Queen Rearing."

Doolittle, G. M.: "Scientific Queen Rearing."

Bee Journals.

"The American Bee Journal," Chicago, Ill.
"Beekeepers' Review," Detroit, Mich.
"British Bee Journal," Covent Garden, London, W. C.
"The Canadian Bee Journal," Brantford, Ontario, Can.
"Gleanings in Bee Culture," Medina, O.
"L'Apiculteur," published 28 Rue Serpente, Paris (VI^{e}).

SERIES OF 1911. VOL. 24. NO. 6.

MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF OCTOBER, 1911.

MUSHROOM GROWING.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary.*

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

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Crop Report for the Month of October, 1911.

Office of State Board of Agriculture,
Boston, Mass., Nov. 1, 1911.

This report is the final issue of the season for 1911. We wish to express our hearty appreciation to our crop correspondents, who have furnished us the information that made this publication possible, without remuneration and with remarkable regularity and faithfulness. We assure them that their work is appreciated, and that any favor we can do them at any time will be cheerfully rendered.

The special articles printed this year have been: Bulletin No. 1, "The growing and marketing of squashes, melons and cucumbers," by Henry M. Howard; Bulletin No. 2, "Cabbage and cauliflower as market-garden and farm crops," adaptation by Howard N. Legate of Farmers' Bulletin on "Cabbage," by L. C. Corbett; Bulletin No. 3, "The more important root crops of the market garden," by H. F. Tompson; Bulletin No. 4, "Beans, corn, tomatoes, lettuce and spinach as market-garden crops," by Henry M. Howard; and Bulletin No. 5, "Some of the essentials of bee-keeping," by Burton N. Gates, Ph.D., State Inspector of Apiaries. The edition of each of these bulletins, with the exception of No. 5, is completely exhausted, but we are still able to furnish the latter to those desiring it. These articles will be included in Bulletin No. 5, now in process of preparation, and applications for these reports will be filled by sending that bulletin, when issued.

The article for this month is an adaptation of Farmers' Bulletin No. 205, of the United States Department of Agriculture, on "The cultivation of mushrooms," by B. M. Duggar, professor of horticulture in the University of Missouri. Mr. Howard N. Legate, first clerk, has prepared the adaptation, which, by reason of lack of space, is considerably

shorter than the original article, but is thought to contain all the essential points necessary for the information of those contemplating a beginning in mushroom growing. There is no attempt to classify or identify mushrooms of various varieties or species, the purpose of the article being to treat merely of the commercial side of growing and handling the crop.

Progress of the Season.

The Crop Reporting Board of the Bureau of Statistics of the United States Department of Agriculture estimates, from the reports of the correspondents and agents of the bureau, as follows: —

For the United States.

Crop.	Condition October 1, or at Time of Harvest (Per Cent).			Sept. 1, 1911 (Per Cent).	Acreage, 1911.	
	1911.	1910.	Ten-year Average.		Per Cent of 1910.	Acres.
Corn,	70.4	80.3	78.6	70.3	101.7	115,939,000
Buckwheat,	81.4	81.7	84.2	83.8	97.0	801,000
Potatoes,	62.3	71.8	75.3	59.8	97.3	3,495,000
Tobacco,	80.5	80.2	83.4	71.1	72.4	893,200
Flax,	69.6	47.2	[1]78.9	68.4	103.3	3,013,000
Rice,	85.4	88.1	86.3	87.2	97.6	705,700
Apples,	59.8	46.4	52.4	56.2	–	–

[1] Eight-year average.

The yields indicated by the condition of crops on Oct. 1, 1911, or at time of harvest, the final yield in 1910, and the averages for 1906–10 follow: —

Crop.	Yield per Acre.			Indicated Total Production, 1911, compared with Total Production (Per Cent) in —	
	Indicated by Condition 1911.	Final, 1910.	Average, 1906–10.	1910.	Average, 1906–10.
Corn, bushels,	23.8	27.4	27.1	88.3	97.9
Buckwheat, bushels,	19.6	20.9	19.6	91.1	98.8
Potatoes, bushels,	79.7	94.4	96.9	82.2	87.0
Tobacco, pounds,	801.1	797.8	826.0	72.7	88.7
Flax, bushels,	8.1	4.8	[1]9.9	172.9	104.1
Rice, bushels,	32.0	33.9	32.4	92.1	105.2

[1] Average, 1905–09.

Preliminary estimates of production have been made as follows: —

Crop.	Yield Per Acre.			Production.		
	1911.	1910.	1906-10.	1911.	1910.	Average, 1906-10.
Spring wheat (bushels),	9.7	11.7	13.5	200,367,000	231,399,000	243,186,800
Winter wheat (bushels),	14.5	15.8	15.5	455,149,000	464,044,000	450,129,600
All wheat (bushels),	12.6	14.1	14.7	655,516,000	695,443,000	693,316,400
Oats (bushels),	24.8	31.9	28.4	873,641,000	1,126,765,000	932,124,400
Barley (bushels),	20.7	22.4	24.8	145,951,000	162,227,000	166,356,000
Rye (bushels),	15.6	16.3	16.4	30,677,000	33,039,000	32,414,000
Hay (tons),	1.09	1.33	1.41	46,969,000	60,978,000	63,507,400

The quality of spring wheat is 79.8 per cent, compared with a ten-year average of 87.1; oats, 84.6 per cent, compared with a ten-year average of 86.6; barley, 84.9 per cent, compared with a ten-year average of 87.5.

All estimates of acreage and production for 1911 are preliminary and subject to modification later.

In Massachusetts the average condition of corn October 1 was 85; the yield per acre of oats 37.7 bushels, the production 264,000 bushels, and the quality 90; the condition of buckwheat was 78; of potatoes, 65; of tobacco, 75; of apples, 70; of grapes, 89; of pears, 85; of cranberries, 74; the yield per acre of cabbages, 6.5 tons; of onions, 290 bushels; the production of tomatoes, compared with a full crop, was 80; of cabbages, 80; of onions, 65; of beans (dry), 78; of Lima beans, 76; of millet for hay, 85; of millet for seed, 85.

Massachusetts Weather, 1911.

[Furnished by Weather Bureau, Boston.]

January: The month was not as cold as usual and was deficient in precipitation. There was much cloudiness, notwithstanding the light rainfall. The daily mean temperatures were generally above the average, and the monthly mean was about 5° above the normal. The snowfall of the month was remarkably light, the total not exceeding 2 inches in interior sections, and ranging from a trace to an inch along the coast. The weather as a whole was exceptionally pleasant, considering the season of the year.

February: Generally speaking the weather was cold, with precipitation near the average. The daily temperatures ranged very near the average, and the monthly mean was less than 1° below the normal. There were no extremes in temperature, and the temperature did not fall below zero in any section. The snowfall was above the average, the excess ranging from 3 to 7 inches. At the close of the month, however, there was little snow on the ground. There was an average amount of sunshine.

March: The month was below the normal in temperature, but the deficiency was slight, less than a degree in most sections. The first week was considerably colder than the average, while for the rest of the month the distribution of temperature was quite irregular. The precipitation for the month was deficient, although the departures were generally less than half an inch. The snowfall was about normal for March. At the close of the month the ground was bare. There was an average amount of sunshine.

April: The month was somewhat colder than usual, the deficiencies ranging from a half degree to a degree and a half below normal. Over the greater portion of the State the precipitation was below the average, although there was somewhat more than the average amount of snowfall. There was a considerable amount of sunshine above the seasonal average. The temperature was unseasonably high during the last four days of the month, rising to 80° and above in nearly all sections. The month as a whole was very pleasant, but was from ten days to two weeks later than usual at its close.

May: The weather of the month was warm and exceptionally dry. The monthly mean temperatures over the State ranged from 3° to 5° above the May averages, and the total rainfall was less than an inch in numerous localities, and less than 50 per cent of the normal in nearly all sections. Notwithstanding the small precipitation of the month, rain fell on an average of twelve days, but the amounts were exceptionally small. There was an abundance of sunshine. At the close of the month it was generally considered that the season was several days in advance of the average.

June: The weather of the month was generally unsettled, with precipitation somewhat above the average, temperature practically normal, and quite a marked deficiency in sunshine. Rain fell on fourteen days, and the monthly rainfall ranged from nearly normal to an inch or more above. The temperature was unusually even, there being no very warm or cold days, and the monthly mean generally was within a degree of the June average. The copious rains broke the drought, but rain was again needed at the close of the month.

July: The month was the warmest of its name within the records of official observation, and, until its close, the driest July in forty years. The month averaged about 5° warmer than the normal July. The humidity was fortunately much below the average. Excepting scattered showers there was no precipitation till the 24th, when copious rains fell in nearly all sections. On the 28th rains occurred, ranging from moderate in interior and western sections to a downpour of several inches on the coast, bringing the rainfall up to the July normal. The drought resulted in great damage to crops.

August: The weather of the month was very near the normal. Droughty conditions, however, prevailed until the 23d, excepting fairly well-distributed showers on the 15th and 18th. A storm from the 24th to the 29th brought the precipitation of the month up to the normal. The temperatures were remarkably even, there being no marked extremes. During the dry weather there was an abundance of sunshine, and the drought did much damage to crops and berries. There were few days of "dog day" weather.

September: The weather of the month was very near the average of the season, the departures from the normals being slight in both temperature and precipitation; also, there were no unusual extremes. Fairly well-distributed light to moderate rains were reported from nearly all sections. Sunshine was less prevalent than usual, overcast skies without rain prevailing on a number of days. There was little weather of the "dog day" type. A heavy frost on the 16th and 17th did considerable damage. The season was considered near the average at the close of the month.

Weather of October (1911).

The weather of the month was very unsettled, with practically normal temperatures, and the precipitation, generally speaking, somewhat deficient. During the first eight days the weather was cooler than the seasonal average, the daily temperatures ranging from 3° to 15° below the October means. From the 9th to the 26th, inclusive, the temperatures were, with slight exceptions, from 2° to 6° above the average. The rest of the month was cool, with freezing weather in many sections on the mornings of the 28th and the 29th. There was an unusually large amount of cloudiness through the month, with light to moderate rains on an average of fifteen days, although the total rainfall in most sections showed a deficiency of about an inch. Fog in coast sections was more prevalent than usual in this month. The moderate temperatures and frequent rains were very favorable to vegetation, which was in excellent condition at the close of the month. The unsettled weather was, however, unfavorable to general outdoor pursuits.

Publications of the Month.

The only publications in October were the September Crop Report, with an article on "Some of the Essentials of Beekeeping," and the annual report for 1910. A considerable number of both these publications still remain available for distribution.

Among the lectures and essays in the annual report are the following: —

New England Pastures.*
The Production of Market Milk.*
The Food Value of Clean Milk; the Demand for Clean Milk; the Reasonableness of it.
Farm Management.
Harvesting and Curing Cigar Wrapper Tobacco.
Corn Growing in New England.*
Corn Selection for Seed and Show.
Growing and Marketing Asparagus.*
Alfalfa as a Crop in Massachusetts.*

Celery Growing, Storing and Marketing.*
Quince Culture.*
Grape Culture.*

Those starred have been printed in pamphlet form and are available as single publications.

The annual report also contains the annual reports to the Board of the State Nursery Inspector, the State Ornithologist, the State Inspector of Apiaries, the State Dairy Bureau, the State Forester, and the semi-annual report of the Chief of the Cattle Bureau, which are all also available in separate form; also, a synopsis of the financial and premium returns of the agricultural societies and a directory of agricultural organizations in Massachusetts.

Crops of the Year.

May opened cold and dry, and continued dry, but warm weather from the middle of the month on brought vegetation forward so that it was fully normal at the close. Early crops were, however, slow in germination. Grass started late, made slow growth until the hot weather came, and was then checked by drought. Feed in pastures was generally short. Fall seeding winterkilled more than usual. The fruit bloom was generally unusually heavy, with no frosts to do damage. Insects were rather more plentiful than usual, with cut worms very prevalent and doing much damage in eastern sections. Gypsy and brown-tail moths continue to extend their territory, and the San José scale is more prevalent than ever. Planting was delayed by the cold and dry weather, and in many sections was behind the normal. Germination of seeds was retarded by drought. Farm help appeared to be rather more plentiful than usual, with wages moving upward, with $25 per month with board the average wage.

With the reports for June an unusual amount of damage from cut worms was apparent, but their ravages were then practically over for the season. Other insects were a little more troublesome than usual. The acreage of field corn was not increased to the degree indicated by returns for May, owing to failure to germinate, but was greater than for several

years. The crop was not in the best condition, owing to cool weather. Haying had hardly begun in any section, and a light crop was in prospect, despite the improvement following the rains. Clover germinated poorly and winterkilled badly. The acreage of early potatoes was decidedly decreased, and the crop was somewhat backward. Early market-garden crops suffered from drought, cold weather and cut worms, and were generally light in yield and high in price. The supply of dairy products was fully up to the demand, with prices for milk lower than last year in the metropolitan district. Where farmers had cows for sale the prices were reported as low, while in eastern sections they were unanimously said to be higher than ever before. Pasturage suffered from drought in May, but responded to the rains, and was quite good at the close of the month. Strawberries were a light crop, with good prices. Currants were light, but raspberries and blackberries promised well. Apples indicated a fair crop. Peaches promised a larger crop than for some years. Cherries were generally an excellent crop. Spraying is receiving more attention each year.

In July there were few complaints of insect damage. The hot weather brought corn forward rapidly, and in western sections it was well up to the average, but suffered from drought in central and eastern sections. The hay crop was very light, of good quality, but with little clover. The prospect for the second crop was poor, owing to drought and hot weather. Forage crops germinated poorly and in some cases were not sown to as great an extent as usual, owing to the dry and baked condition of the ground. Market-garden crops suffered severely from drought, and were short in almost all cases, with prices correspondingly high; later crops looked well, though needing rain. Early potatoes were a very light crop, while the later ones looked well. There was an unusually heavy crop of fruit, apples especially. Pears promised fairly well, also plums. Peaches seemed a better crop than usual. Grapes promised a good yield. Cranberries felt the effects of drought, and promised less than an average crop. Pastures were in fairly good condition in western sections, not so good in Worcester County and very poor in eastern

sections. Rye was a fair crop and oats a three-fourths crop. Oats did fairly well as forage crops. Barley is not grown except as a late forage crop. Thirty-five of 117 correspondents reported some orchard planting, ranging from 2 acres to 2,500 trees.

Corn came forward very rapidly with the warm weather and light showers of August, and promised a full normal crop. The rowen crop promised to be very light in all sections, with practically none in eastern districts, owing to severe drought and general failure of clover to germinate. Potatoes showed a luxuriant growth of vines, but were reported as not set well and few in a hill and small. Blight was frequently reported, with a few reports of rot. The acreage of tobacco shows a slight decrease, but the crop generally promised well, with good prices. A light crop of apples was indicated in most sections. Fruit was reported as unusually fair, with much less insect injury than usual, owing to increased spraying. Pears were generally a good crop, peaches much better than usual, grapes abundant and cranberries below the normal, with small berries. Pastures were generally in good condition in western sections, fair in the central part of the State, and much below the average in eastern sections. Oats were a light crop for grain, but more satisfactory for hay. Barley was backward at time of making returns. Celery was short and backward. Other late market-garden crops generally promised well. Midsummer market-garden crops were light yields, with good prices.

Heavy frosts on the 13th, 14th and 15th of September severely damaged the corn crop, many strains not having matured the ears and the stover being generally badly damaged. The feeding value of ensilage corn was much impaired. Rowen was a very short crop before the rains, and light at best and suffered much damage from rain while curing. Fall feed came along well, both in pastures and mowings. Considerably less than the usual amount of fall seeding was done, owing to dry weather in August and continued rains in September, but it germinated well and was in good condition. Onions were a very light crop in all sections, especially in the Connecticut valley, small in size, and with

prices unusually high. Potatoes were a very light crop in almost all sections. Root crops were generally in good condition. Celery promised well, with some reports of decreased acreage. Other late market-garden crops generally promised well. Apples were a light crop, less than half a crop, of excellent quality where sprayed. Pears were generally abundant, peaches a heavier crop than usual, grapes a heavy crop and cranberries a light crop. The frosts destroyed all tender vegetation, except on Cape Cod, and the damage was less in Bristol and Plymouth counties than elsewhere. More or less tobacco was caught unharvested. Considerable damage was reported in the market gardens of eastern sections.

Summary of Crop Conditions.

In the circular to correspondents, returnable October 26, the following questions were asked: —

1. What is the value of the corn crop compared with a normal crop?
2. Have root crops proved to be average crops?
3. What is the condition of farm stock?
4. What is the condition of fall seeding?
5. How have prices for crops raised for market compared with former years?
6. Which of the leading crops in your locality, usually profitable, have been most profitable?
7. Which of the leading crops in your locality, usually profitable, have been least profitable?
8. Considered as a whole, has the season been a profitable one for your farmers?
9. Have streams, springs and wells recovered from the effects of drought?

Returns were received from 126 correspondents, and from them the following summary has been prepared: —

Value of the Corn Crop.

The corn crop was considerably below the normal in value, owing to damage by drought, frost and rains since harvest. The heavy frosts of the middle of September cut the crop

short in almost all sections, but do not appear to have done as much damage to the grain as was then anticipated. For grain, the crop, judging from the returns of the correspondents, roughly averaged, was about three-fourths of a normal crop in value. The value of the stover seems to have been diminished somewhat more, perhaps one-third off the normal. Ensilage corn suffered more from frost than that grown for grain, as but few had ensiled their corn when the frosts affected it. This leads to the suggestion that many farmers would find it more profitable, taking one year with another, to use some strain of corn for the silo that matures more quickly than those ordinarily grown for that purpose, even if a considerable amount of plant growth must be sacrificed.

Root Crops.

There were very few reports of root crops being above the average, and enough of their being below to warrant the conclusion that for the State as a whole they are slightly below the average. The principal trouble seems to come from their not germinating well in the early fall. Where good germination was secured they seem to have grown well, and made good size and yield.

Farm Stock.

The heavy rains kept fall feed green and growing up to the time of making returns, and farm stock generally improved in condition during the month. The majority of the correspondents report stock to be in good condition, but there are a considerable number of reports that it is in fair condition or "thin in flesh." This is doubtless due to drought in the early part of the season, and is especially noticeable with young stock and dry cattle.

Fall Seeding.

Considerably less than the usual amount of fall seeding was done, owing to the dry condition of the ground at the usual time for seeding, and the continuous rains that followed the breaking of the drought. That put in is generally

reported as having germinated well, with the rains, and to have come forward in fine style, being in good condition at the time of making reports. Clear and seasonable weather is needed in some cases to prepare the young plants for the winter.

Prices.

Prices have generally been rather higher than usual, owing to short crops. Potatoes have brought particularly high prices, as have some of the market-garden crops at times. Apples have generally brought prices fully up to last year, and in some cases above, owing to the short crop and generally improved quality, due to better care and spraying. Prices for tobacco and onions have generally been high. Seventy-seven correspondents consider prices to have been higher than usual, 37 average and 6 lower than usual.

Most Profitable Crops.

Forty-four correspondents, rather a small number to unite on one leading crop, consider hay to have been among most profitable crops; 27, corn; 22, potatoes; 19, apples; 9, cabbage; 7, tobacco; 5, onions; 4, tomatoes; 4, cranberries, 4, strawberries; 4, beets; 3, market-garden crops; 3, milk; 3, sweet corn; 2, forage crops; 2, asparagus; 2, early sweet corn; 2, beans; 2, cauliflower; 2, parsnips; 1, oats; 1, millet; 1, vegetables; 1, grapes; 1, ensilage corn; 1, small fruits; 1, melons; 1, celery; 1, early shell beans; 1, lettuce; 1, peas; 1, carrots; 1, squash; 1, fruit; 1, pears; and 1, turnips.

Least Profitable Crops.

Seventy-eight correspondents, more than a majority, and an unusually large leading number, considered potatoes to have been among the least profitable crops; 12, hay; 11, corn; 10, apples; 6, squash; 6, onions; 4, oats; 4, strawberries; 4, tomatoes; 3, beans; 3, cabbage; 3, sweet corn; 3, cranberries; 3, peas; 2, early potatoes; 2, cabbage; 1, milk; 1, raspberries; 1, late sweet corn; 1, late tomatoes; 1, cucumbers; 1, late berries; 1, carrots; and 1, small fruits.

Profits of the Season.

The season is hardly regarded as a profitable one for our farmers, 52 correspondents speaking of it as not profitable; 2, as fairly profitable; 10, as not up to the average for profit; 8, as not very profitable; 7, as an average season for profit; and 41, as profitable. Crops have been short, owing to drought and frost, and while prices have been high in most instances the increase in price does not seem to have counterbalanced the short yields.

Streams, Springs and Wells.

The heavy rains of the month have had a good effect on streams, springs and wells. In the western counties they are almost universally reported as to have fully recovered from the effects of drought. In Worcester County and the more eastern sections their condition is not quite as good, there being quite a number of reports that deep-fed springs and wells have not yet recovered, while a few report that there is still a shortage of water in streams. These reports are not numerous enough, however, to have any great bearing on the condition for the State as a whole. The ground is generally reported to be full of water, and grass and vegetation to have recovered to a remarkable degree from the previous bad effect of the drought.

NOTES OF CORRESPONDENTS.

(Returned to us October 26.)

BERKSHIRE COUNTY.

New Marlborough (E. W. Rhoades). — The drought and frost cut the corn crop to one-half of a normal crop. Root crops have done well, especially ruta bagas. Farm stock looks well. The moist, cool weather has been good for fall seeding. Prices on crops are not as good as in former years. Hay has been our most profitable crop and apples our least profitable one. Considered as a whole, the year was not a profitable one for our farmers. Streams, springs and wells have recovered from the effects of drought.

Alford (Lester T. Osborne). — The corn crop was about normal, but the stover was badly damaged by rain and wet weather and some corn is moulding. Potatoes are about two-thirds of an average crop. Farm stock is quite up to the average in condition. Fall seeding is looking finely. Prices for farm crops have been fully equal to former years. Hay has been our most profitable crop and potatoes our least profitable one. As a whole the season has been above the average for profit. Springs, streams and wells are full for the first time in nearly four years.

Becket (Wm. H. Snow). — The corn crop is two-thirds of the normal in value. Root crops are average crops. Farm stock is in very fair condition. The later rains have improved fall seeding and it looks well now. Fully average prices have been received for farm crops. Oats and millet have been our most profitable crops and corn our least profitable one. The season is about an average one for profit. Streams, springs and wells have recovered from the drought.

West Stockbridge (J. S. Moore). — The corn crop is about as last year in yield, and of good quality. Root crops are about average. Farm stock is in better condition than usual. Fall seeding is in very good condition. Prices for crops raised for market are about as usual, with potatoes commanding a better price than last year. Potatoes and hay have been our most profitable crops. Considered as a whole, the season has been a profitable one. Streams, springs and wells have fully recovered from drought and the ground has not been as full of water for the past three years as at present. Since our farmers organized a grange more interest has been taken in farm work, which shows very conspicuously in the better condition of their farms and a corresponding increase in value.

Hinsdale (Alfred N. Warren). — Corn is about three-fourths of a full crop, but of good quality. Sugar beets and cabbages are fine crops of large size. Stock in general is looking finely. What little fall seeding was sown looks finely. Prices are higher for farm crops than usual. Potatoes, cabbages and apples were our most profitable crops, yields not large but prices good. Oats have proved our least profitable crop. Considered as a whole, the season has been a profitable one for our farmers. Streams, springs and wells have recovered from the drought.

Dalton (Wesley B. Barton). — The corn crop is 70 per cent of the normal in value. Root crops are up to the usual average. Farm stock is in fair condition. Fall seeding is in good condition. Prices for farm crops have been better than usual. Market-garden crops have been our most profitable crops and potatoes our least profitable one. Considered as a whole the season has been a profitable one for our farmers. Fall feed has been extremely good. Milch cows are extremely high; other stock low. Streams, springs and wells are full.

Windsor (Harry A. Ford). — Indian corn is not over 80 per cent of a normal crop. Root crops have proved average yields. Farm stock is in good condition. There has been no fall seeding. Potatoes have been our most profitable crop, and apples our least profitable one. The season has not been a normal year for profit. Streams, springs and wells have recovered from drought.

Cheshire (L. J. Northup). — The corn crop is about 75 per cent of the normal. Root crops are average yields. Farm stock is in good condition. Not much fall seeding was done, but it looks well since the rains. Prices for crops are well maintained and compare well with former years. Hay has been our most profitable crop and potatoes our least profitable one. So far as dairy products are concerned the season has been a normal one for profit. Feed in pastures is much better now than in August and mowing land has much improved. Streams, springs and wells have recovered from the effects of drought.

Williamstown (S. A. Hickox). — Corn is 85 per cent of a normal crop. Root crops are up to the average. Farm stock is in normal condition. Fall seeding is in good condition. Prices for crops raised for market maintain a good average. Hay has been our most profitable crop and early potatoes our least profitable one. The season has been a profitable one, except for those farmers whose main reliance is on the early potato crop. Streams, springs and wells have recovered from the effects of drought.

FRANKLIN COUNTY.

Rowe (Henry D. Wright). — Indian corn is about half a normal crop. Root crops are up to the average. Farm stock is in fair condition. No fall seeding has been done. Potatoes are 35 per cent higher in price than usual, with apples about the same as usual. Hay and potatoes have been our most profitable crops and corn our least profit-

able one. The season has not been a profitable one for our farmers, considered as a whole, owing to the early frost and heavy fall rains. Streams, springs and wells have recovered from the effect of drought,

Leyden (Frank E. Foster). — Indian corn is an average crop. Root crops are up to the average. Farm stock is in good condition. Fall seeding is in fine condition. Potatoes and hay are higher in price than usual and apples lower. Hay and corn have been our most profitable crops and potatoes our least profitable one. The season has not been a profitable one for our farmers, grain having been very high in price and calves, hogs and milch cows lower than usual. Streams, springs and wells have recovered from drought.

Bernardston (R. H. Cushman). — The corn crop was badly frosted; grain nearly normal, but three-fourths of the crop is siloed. Roots are small in size. Much farm stock is thin in flesh. But little fall seeding has been done and its present condition is favorable. There are no marked changes in the prices of farm crops except for potatoes. This has been a hard season for our farmers. Streams, springs and wells have recovered from drought.

Gill (F. F. Stoughton). — The corn crop is three-fourths of the normal in value. Farm stock is in good condition. Fall seeding is in good condition. Prices received for milch cows and for cream have been less than formerly. Hay has been our least profitable crop. Considered as a whole, the season has not been a profitable one for our farmers. Streams, springs and wells are not up to the usual average.

Whately (C. L. Crafts). — Indian corn is about 90 per cent of a normal crop. Root crops are average yields. Farm stock is in fair condition. Fall seeding is in good condition. Prices for crops raised for market have been better than usual. Onions and tobacco have been our most profitable crops and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers. Streams have recovered from the effects of the drought, but wells have not.

Sunderland (Geo. P. Smith). — The corn crop is not as good as it promised to be, is about 85 per cent of the normal. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is good in most cases. Prices for farm crops are higher than usual. Onions, and in some cases, tobacco, have been our most profitable crops and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers. Streams, springs and wells have recovered from the effects of drought.

Wendell (N. D. Plumb). — Indian corn is about three-fourths of a normal crop. Root crops are not up to the average. Farm stock is in good condition. Fall seeding is looking the best for a decade. Prices are about 10 per cent higher than usual. Hay and late potatoes have been our most profitable crops and corn and oats our least profitable ones. The farmer is surely up against it this year. The

rains of the past week have filled wells and springs that have been dry for a year.

Erving (Charles F. Clark). — Indian corn is 65 per cent of a normal crop. Root crops are below the average. Farm stock is in fair condition. Fall seeding is in good condition. Prices for crops raised for market have been somewhat higher than usual. Hay has been our most profitable crop. I do not think that the season has been a profitable one for our farmers. Streams, springs and wells have mostly recovered from the effects of drought.

New Salem (Daniel Ballard). — Corn is perhaps 75 per cent of a normal crop. Root crops are about average. Farm stock is looking well. Recent rains are bringing fall seeding forward in fine condition. Prices for crops grown for market are up to the average. Hay and corn have been our most profitable crops and apples and potatoes our least profitable ones. The season has been less profitable than usual. The recent rains have filled streams, springs and wells.

HAMPSHIRE COUNTY.

Ware (J. H. Fletcher). — The corn crop is about 75 per cent of the normal. Root crops are up to the average in some parts of town. Farm stock is looking very well. Fall seeding is in good condition. Prices for farm crops are about as usual, except for potatoes, which are higher. Hay has been our most profitable crop and potatoes our least profitable one. With most farmers the season has been a profitable one.

Enfield (D. O. Chickering). — Indian corn is about half a normal crop. Fall seeding is now looking well. Prices for crops grown for market have been somewhat above the average. None of our leading crops have been profitable, the drought and frost making a shortage in all farm crops. Considered as a whole, the season has not been a profitable one for our farmers. Streams, springs and wells have recovered from drought.

Prescott (W. F. Wendermuth). — Corn would have been a full crop but for the frost, but is from 65 to 70 per cent of the normal in value. Root crops are below the average, as seeds did not germinate well. Farm stock is fully up to the average for this month. Fall seeding is in excellent condition. Most of our crops go to market in the form of milk, cream, butter, veal, pork and eggs, and prices have been higher for these than formerly. Hay and fodder crops have been our most profitable crops and corn and apples our least profitable ones. Considered as a whole, the season has been a profitable one for our farmers. Wild deer have done considerable damage this season.

Belchertown (Almon L. Pratt). — Corn is 80 per cent of a normal crop in value. Root crops are average yields. Farm stock is in fair condition. Fall seeding is in good condition. The market

prices for farm crops have ruled high. Corn has been our most profitable crop and potatoes our least profitable one. Considered as a whole, the season has not been a profitable one for our farmers. Streams, springs and wells have recovered from drought. The frost of September 14th did great damage.

Amherst (Wm. P. Brooks). — Indian corn is about 70 per cent of a full crop in value. Root crops are unimportant, but are up to the average. Farm stock is in good condition. Fall seeding is in good condition. Tobacco, onions and potatoes are all higher in price than formerly. Tobacco, onions, potatoes and hay have been our most profitable crops and corn our least profitable one. The season has not been a profitable one except for those farmers occupying soils the least subject to drought. Streams, springs and wells have recovered from the effects of drought. The weather has been very unfavorable for harvesting, with considerable damage to onions in late crops.

Hatfield (Thaddeus Graves). — Early planted corn is good, late planted injured by frost. Rowen and fall feed are up to the usual average. The rains have brought fall seeding forward well. Onions were injured by dry weather, and the yields are off one-third, but the quality is good. Potatoes were small in size and injured by dry weather. The prospect for root crops is fair. Apples are about half a crop. Streams, springs and wells have recovered from drought.

Southampton (C. B. Lyman). — Indian corn is 80 per cent of the normal in value. Root crops are average; potatoes below average. Farm stock is in fairly good condition. Fall seeding is looking well. Prices for crops raised for market are rather higher than usual. Tobacco has been our most profitable crop and potatoes our least profitable one. The season has not been a very profitable one for our farmers. Streams, springs and wells are full to overflowing.

Cummington (W. A. Harlow). — Corn is three-fourths of a normal crop. Root crops are up to the usual average. Farm stock is looking well. Fall seeding is in very good condition. Prices for farm crops have been well sustained. Potatoes have been our least profitable crop. We are in a dairy section and the price of butter, as compared with grain, has been against the farmer. The apple crop shows some orchards with a good yield while others in the same locality, with equally good care, have very few. Streams, springs and wells are full.

Middlefield (J. T. Bryan). — Indian corn is about three-fourths of a normal crop in value. Potatoes are less than half an average crop. Farm stock is in excellent condition. Fall seeding is in good condition. All crops have brought good prices. Grass and fodder crops have been most profitable with us and potatoes least profitable. The season has not been an average one for profit. The streams, springs and wells have recovered from drought with the rains of the past week.

HAMPDEN COUNTY.

Tolland (Eugene M. Moore). — The corn crop is 90 per cent of the normal in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices for farm crops have been higher than usual. Hay has been our most profitable crop and potatoes our least profitable one. The season has been nearly average for profit. Streams, springs and wells are full.

Blandford (Enos W. Boise). — Indian corn is 90 per cent of a full crop in value. Root crops are not average crops. Farm stock is in first class condition. Fall seeding is in good condition. Prices for all farm crops have been, and still are, fully above the average. Grass has been our most profitable crop and apples our least profitable one. Considered as a whole, the season has been a profitable one for our farmers. Streams, springs and wells are fully recovered from drought.

Russell (E. D. Parks). — The corn crop is up to the average in value. Root crops are not up to the usual point in yield. Farm stock is in very good condition, fall feed having been good. But little fall seeding has been done. Prices for crops raised for market are fully as high as usual. Hay and corn have been our most profitable crops and potatoes our least profitable one. The season is rather below the average for profit, if anything. Streams, springs and wells are fully recovered from the effects of drought.

Southwick (L. A. Fowler). — The corn crop suffered from early frost. Farm stock is in good condition. Fall seeding is in good condition. Tobacco has been our most profitable crop and potatoes our least profitable one. Opinions differ as to the profits of the season; those who have a sound crop of tobacco think it has been profitable, while those whose crops were hail cut or frost bitten think otherwise. Streams, springs and wells have recovered from drought.

West Springfield (N. T. Smith). — The corn crop is about 90 per cent of the normal in value. Root crops are up to the normal, with the exception of potatoes. Farm stock is in good, average condition. Fall seeding is in excellent condition, but below average in amount. Prices have been higher than formerly and in many cases have atoned for smaller yields. Milk is the leading dairy product and is probably as profitable as any this season; berries, strawberries especially, garden beans and potatoes have been among our least profitable crops. The season has been a hard one for our farmers. Streams, springs and wells are well filled and grass is as green as in spring.

Chicopee (E. L. Shaw). — The corn crop is fairly good, but is being damaged somewhat by excessive rains. Root crops are a little below average. Farm stock is in fairly good condition. Fall seeding is in good condition. Prices for crops raised for market are generally a little higher than usual. Corn has been our most profitable crop and potatoes our least profitable one. The season has not generally been

a profitable one. Late cabbage, of which quantities are raised, is not very promising, but marketing has not begun. Streams, springs and wells have recovered from drought.

Ludlow (Chas. B. Bennett). — Indian corn is about 80 per cent of a full crop in value. Root crops are fairly good. Farm stock is about in average condition. Fall seeding is in very good condition. Prices for crops raised for market have been better than usual. Hay has been our most profitable crop and potatoes our least profitable one. Considered as a whole, the season has not been a very profitable one. Nearly all wells and springs are full. Apples are about half a crop, selling at from $2.50 to $4.00 per barrel. Mowings and pastures are in first class condition.

Hampden (John N. Isham). — The corn crop was one of our best and of full value compared with other years. Most root crops have proved good average yields. Farm stock is in good condition. Fall seeding has done remarkably well. Prices for crops have been higher than in former years. Corn and hay have been our most profitable crops and potatoes our least profitable one. Considered as a whole the season has been profitable. Recent rains have given a full water supply. Potatoes never recovered from drought. Apples were a light crop, but prices have been high.

Palmer (O. P. Allen). — Indian corn is about two-thirds of a normal crop in value. Root crops are not quite up to the normal. Farm stock is in fair condition. Fall seeding is quite good, due to late abundant rains. Prices for crops raised for market have been much higher than usual. Corn has been our most profitable crop and potatoes our least profitable one. The season has not been as profitable as usual. Streams, springs and wells have apparently recovered from the drought.

WORCESTER COUNTY.

Warren (William E. Patrick). — Indian corn is about 50 per cent of a normal crop in value. Farm stock was in very poor condition in August, but is now beginning to look well. The condition of fall seeding is very good. All crops have been unprofitable. It has not been a profitable season for our farmers. To a very large extent streams, springs and wells have recovered from the effects of drought, but some very deep wells have not recovered yet.

North Brookfield (John H. Lane). — The corn crop is not over 60 per cent of the normal in value. Root crops are 10 per cent below the average. Farm stock is in fair condition. Fall seeding is in fine condition. Prices for crops raised for market are higher than usual. Hay has been our most profitable crop and apples our least profitable one. Considered as a whole, the season has not been up to the average. Streams have somewhat recovered from the effects of drought, but springs have not nor have deep wells.

Dana (Lyman Randall). — The corn crop will not be over three-fourths of the normal in value. Root crops are fair, but on the whole not average. Farm stock is looking well. What fall seeding has been done is looking well. Prices for market crops will average with former years. Hay and corn have been our most profitable crops and potatoes and apples our least profitable ones. The season has not been a profitable one. Streams, springs and wells have fully recovered from the effects of drought and the ground is well filled with water.

Templeton (Lucien Gove). — The corn crop is 85 per cent of the normal in value. Root crops grew slowly and have not proved average yields. Farm stock is in fairly good condition. Fall seeding is in good condition. Owing to scarcity, prices for farm crops have ruled higher than usual. Corn, hay, cabbage and vegetables have been our most profitable crops, and potatoes, apples, peas and beans our least profitable ones. The season has been a disappointing one, and not profitable. Streams, springs and wells have recovered to a very large extent.

Gardner (W. E. Knight). — Indian corn is 90 per cent of the normal in value. Root crops are up to the average. Farm stock is thin in flesh. Fall seeding is in first class condition. Prices are a little higher than the average for crops raised for market. Corn has been our most profitable crop and potatoes our least profitable one. Considered as a whole, the season has not been a profitable one. Streams, springs and wells have recovered from drought.

Ashburnham (E. D. Gibson). — Corn is about a three-fourths crop in value. Root crops are below the average. Farm stock is in average condition. Little fall seeding has been done, but is in splendid condition. Prices have been good for farm crops. No leading crops have been especially profitable. Potatoes have been our least profitable crop. The season can hardly be called a profitable one, as it is too dry. Many streams, springs and wells have not yet recovered from drought.

Princeton (A. O. Tyler). — The corn crop is four-fifths of the normal in value, being injured by frost and rain. Root crops are up to the average. Farm stock is in good condition. Fall seeding is in very good condition. Prices for farm crops have been from one-fourth to one-third higher than usual. Potatoes have been our least profitable crop. Poor pasturage, a short hay crop and partial or entire failure of hoed crops has made the season unprofitable for our farmers. In most places streams, springs and wells have recovered from the drought.

Worcester (H. R. Kinney). — The corn crop is probably not over 75 per cent of the normal in value. There was much trouble in germination of root crops, but those that came have made a good growth. Farm stock is in good condition. Fall seeding was late, but started nicely since the rains. Prices for crops raised for market have been

high on the whole. Potatoes and onions have been our least profitable crops. I should not call the season a profitable one. The ground seems to be better supplied with water than for some time.

Leicester (H. H. Kingsbury). — Corn is fully up to the normal in quantity and quality. The potato crop is much below the average; all other root crops good. Farm stock is in fair condition. Fall seeding is in first class shape. Hay has been our most profitable crop and potatoes our least profitable one. For several reasons this has been a trying season for farmers and not a profitable one. Streams and springs have recovered from the drought, and the wells are slowly responding as the rain sinks into the ground.

Southborough (Edward F. Collins). — The corn crop is 90 per cent of the normal in value. Fall feed has been very good and farm stock is in average condition. Fall seeding is in good condition. Prices have been higher than usual for most farm crops. Apples and sweet corn have been our most profitable crops and potatoes and fodder corn our least profitable ones. Considering the short hay crop the season is a little below the average for most farmers. Streams, springs and wells have improved, but deep springs have not benefited much as yet.

Milford (J. J. O'Sullivan). — Indian corn is 90 per cent of the normal in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in fair condition. Prices for crops raised for market are a trifle higher than usual. Potatoes have been our most profitable crop and hay our least profitable one. Considered as a whole, the season has been a profitable one for our farmers. Streams, springs and wells have recovered from the effects of drought.

MIDDLESEX COUNTY.

Marlborough (E. D. Howe). — The corn crop is 100 where not injured by frost. Root crops are up to the average. Farm stock is in good condition. Fall seeding is in first class condition. Prices for farm crops are mostly higher than usual, due to scarcity. Strawberries have been our most profitable crop and potatoes our least profitable one. Considered as a whole, the season has not been a profitable one. Streams, springs and wells have not recovered from drought.

Maynard (L. H. Maynard). — Silo corn is above normal in value; field corn did not mature well and was damaged by frost. Root crops are about average; potatoes very poor. Farm stock is in very good condition. Fall seeding looks remarkably well. Prices for farm crops have been a little better than in former years, owing to short crops. Apples have been our most profitable crop and hay our least profitable one. The season has not been a profitable one for our farmers. Streams, springs and wells have not recovered from the effects of drought.

Littleton (Geo. W. Sanderson). — The corn crop is below the normal in value. Root crops are below average in both quantity and price. Farm stock is in good condition. Late rains have improved fall seeding. Apples and pears brought better prices than last year. Apples have been our most profitable crop and potatoes our least profitable one. Considered as a whole, the season has been a profitable one. Streams, springs and wells have not entirely recovered from drought.

Westford (J. W. Fletcher). — Indian corn was damaged by frost. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in the best condition. Apples have been our most profitable crop and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers. Streams, springs and wells have not recovered from the effects of drought.

Townsend (G. A. Wilder). — The corn crop is about as usual in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in fair condition. Prices for crops grown for market have been higher than usual. Apples, peaches and potatoes have been our most profitable crops. Considered as a whole the season has been a profitable one for our farmers. Streams, springs and wells are not yet recovered from drought.

Lexington (Howard M. Munroe). — The corn crop is about 75 per cent of the normal in value. Root crops are about 60 per cent of the average yield. Farm stock is in good condition. Fall seeding is looking very well, but there was less put in than usual. Prices for all crops have been good. Some of the market-garden crops have been our most profitable crops and hay and potatoes have been our least profitable ones. The season can hardly be called profitable, but most farmers have some crops that have paid better than the average. Streams and springs have not recovered from the drought.

Lincoln (C. S. Wheeler). — The indian corn crop is 80 per cent of the normal in value. Root crops are not up to the usual average. Farm stock is in fair condition. Fall seeding is below average. Prices have fluctuated widely on farm crops, with the average good. Apples, early sweet corn, early shell beans and early tomatoes have been our most profitable crops and late sweet corn and late tomatoes our least profitable ones. Considered as a whole, the season has hardly been a profitable one for our farmers. Streams, springs and wells have not fully recovered from the effects of drought.

Stoneham (J. E. Wiley). — Root crops are not up to the average. Fall seeding is in good condition. Prices for crops raised for market have been higher than usual. Lettuce has been our most profitable crop and cucumbers our least profitable one. Considered as a whole, the season has been a profitable one for our farmers. Streams, springs and wells have recovered from the effects of drought.

Weston (Henry L. Brown). — The corn crop is 90 per cent of the

normal in value. Root crops are not average on the whole, some fields being good and others poor. Farm stock is in good condition. Fall seeding is somewhat late, but looks fairly well. Early crops sold for high prices; later ones low. Early sweet corn and cabbage have been our most profitable crops and squash and late beans our least profitable ones. Considered as a whole, the season has not been a profitable one for our farmers. Streams and ponds are still low, but surface springs are well filled. Fall feed is abundant; not much rowen and what there was mostly spoiled by continued dull weather.

ESSEX COUNTY.

Salisbury (Wesley Pettengill). — The corn crop is not quite up to the normal in value, say 75 or 80 per cent. Most root crops are considerably below the average. Farm stock is looking well and pastures have held out remarkably well. But little fall seeding has been sown, but it is looking finely. Crops have brought about average prices; some higher and some lower. Hay and apples have been our most profitable crops and potatoes our least profitable one. The year has been a good average one for the farmers in this section. Squashes were a large crop and most of them were sold to the canning factory for $6 per ton.

Methuen (Frederick A. Russell). — Sweet corn was an average crop; ensilage corn and field corn late and injured by frost. Carrots and parsnips are scarce and potatoes are scarce and poor. Farm stock is in very fair condition. Fall seeding is in very good condition. Prices for crops raised for market were higher than usual until August 1, and since then have been about average. Peas, beans, cabbage, beets, sweet corn and cauliflower have been our most profitable crops and potatoes, onions and tomatoes our least profitable ones. As a whole, the season has been somewhat below the average. The condition of streams and springs has been improved by recent rains, but in deep wells the water is still low.

Topsfield (B. P. Pike). — Indian corn is 80 per cent of a full crop in value. Root crops have proved to be about 80 per cent of the normal. Farm stock is in good condition. Fall seeding is in very good condition. Prices for crops raised for market have been up to the average. Apples, potatoes and corn have been our most profitable crops and hay our least profitable one. Considered as a whole, the season has been a profitable one for our farmers. Streams, springs and wells have recovered from the effects of drought. Milk is our main money crop; others are side lines.

Wenham (N. P. Perkins). — There is but little corn in this vicinity. Root crops, with a few exceptions, have not proved average crops. Farm stock is generally in good condition, as fall feed has been good. Fall seeding is looking well. Prices have been fairly good for farm crops. Early cabbage, early potatoes, milk, apples and parsnips have

been our most profitable crops, and tomatoes, squashes, onions, carrots, hay and beans our least profitable ones. Profits for the season depend altogether upon prices received. There is no scarcity of water on most of our farms.

Danvers (C. H. Preston). — The corn crop is three-fourths of a normal crop in value. Root crops have not proved up to the average. Farm stock is in good condition. Fall seeding is in good condition. Prices have been well up to the average for farm crops and in some cases above. Cabbage, carrots and parsnips have been our most profitable crops and squash our least profitable one. Considered as a whole, the season has been a profitable one for our farmers. Streams, springs and wells have recovered from the effect of drought.

NORFOLK COUNTY.

Cohasset (Ellery C. Bates). — Indian corn is normal in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been higher than formerly. Cauliflower, tomatoes and beans have been our most profitable crops and potatoes our least profitable one. Considered as a whole, the season has been a profitable one. Streams, springs and wells have recovered from the drought.

Randolph (Rufus A. Thayer). The corn crop is a good average crop in value. Root crops are normal. Farm stock is in good average condition. Fall seeding is late on account of drought. Prices for farm crops have been about average. Most garden crops have done well and potatoes have been our least profitable crop. The season has been a profitable one, much better than the past two seasons. Streams, springs and wells are filling up rapidly.

Canton (Edwin V. Kinsley). — The corn crop is 100 per cent of the normal. Root crops are average crops. Farm stock is in good condition. Fall seeding is in good condition. Prices for farm crops have been above the average. Potatoes, apples and squashes have been our most profitable crops, and onions and corn our least profitable ones. Considered as a whole, the season has been a profitable one. Streams, springs and wells have recovered from drought. The rowen crop has been a good one, but is not yet quite harvested.

Norwood (Frank A. Fales). — The corn crop is 80 per cent of the normal in value. Root crops are up to the usual average. Farm stock is in fine condition. Fall seeding is rather late, owing to the wet spell. Prices for crops raised for market have been about average with the past three years. Corn has been our most profitable crop and cabbage our least profitable one. Considered as a whole, the season has not been a profitable one. Shallow springs and wells have recovered from the effects of drought, but deep wells have not.

Millis (E. F. Richardson). — The corn crop is 100 per cent of the normal in value. Root crops are below the average. Farm stock

is in excellent condition. Fall seeding is in fine condition. Prices for crops raised for market have been higher than usual. Corn, hay and fruit have been our most profitable crops and potatoes our least profitable one. The season has been a fairly profitable one. Streams, springs and wells have not yet recovered from drought.

Foxborough (William E. Perkins). — Indian corn is three-fourths of a normal crop. Root crops are up to the average. Farm stock is in fair condition. The wet fall and warm weather has brought along fall seeding in good shape. Prices for crops raised for market have been normal. Considered as a whole, the season has not been a profitable one for our farmers. Streams, springs and wells have recovered from the effects of drought.

BRISTOL COUNTY.

Easton (Wm. N. Howard). — Root crops, with the exception of potatoes, are average crops; turnips were hard to start, but where they came up well are good. Farm stock is in good condition. Fall seeding is in good condition and much has been seeded later than usual, owing to unfavorable weather for farm work. Prices have been higher for farm crops, as a rule, than usual. Cabbage, beets, turnips and hay have been our most profitable crops and potatoes our least profitable one. The season has not been a profitable one, as crops were generally too light. Streams, springs and wells have fully recovered from drought.

Mansfield (E. Jasper Fisher). — The value in the corn crop will be about normal, owing to the high price of grain. Root crops are somewhat above the normal. Farm stock is in very good condition. Fall seeding is in good condition. Prices for crops raised for market have been very much higher than usual. Corn, potatoes and hay, by reason of high prices, have been our most profitable crops, and strawberries and cranberries our least profitable ones. Considered as a whole, the season has been a very good one for profit. Streams, springs and wells have fully recovered from the effects of drought.

Seekonk (John W. Peck). — The corn crop where grown for grain, is 80 per cent of the normal. Root crops are fully up to the average. Since the rains pastures have taken a new lease of life and stock is in good condition. Fall seeding is looking finely now. Taken as a whole, prices for farm crops are fully up to former years. If celery is secured in good condition it will be our most profitable crop; cabbage is our least profitable crop. I think that the season has been a profitable one for our farmers. Streams, springs and wells have recovered from drought.

Rehoboth (Adin B. Horton). — The corn crop is 75 per cent of the normal in value. Root crops are up to the usual average. Farm stock is in good condition. Not much fall seeding has been done in this section. Prices for crops raised for market have been about the same

as usual. Tomatoes and beets have been our most profitable crops and cabbage and sweet corn our least profitable ones. The season has been a profitable one with most farmers, though some specialists had rather a bad season. Streams, springs and wells have recovered from the effects of drought.

Dighton (Howard C. Briggs). — The corn crop is below the average in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been below the average, except for potatoes. Strawberries have been our most profitable crop and tomatoes and sweet corn our least profitable ones. Most farmers report little or no profit for the season. Streams, springs and wells are very low.

Swansea (F. G. Arnold). — The corn crop is fully up to the average in value. Root crops are up to the average. Farm stock is in very good condition. Fall seeding is in good condition. Prices for crops grown for market have been above the average. Early cabbage and beets have been our most profitable crops and late potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers. Streams, springs and wells have not risen to their usual condition, but are full enough for general use. With an unusual amount of wet weather we have had a light rainfall.

PLYMOUTH COUNTY.

Brockton (Davis Copeland). — The corn crop is about 90 per cent of the normal in value. Root crops are nearly up to the average. Farm stock is in good condition. Fall seeding is looking finely. Prices for crops grown for market have not been quite up to the average. Peas and early potatoes have been our least profitable crops. On the whole the season has not been very profitable. Streams, springs and wells have recovered from the effects of drought to quite an extent.

Hanover (Harrison L. House). — The corn crop is normal in value. Root crops are up to the average. Farm stock is in good condition. There has been very little fall seeding, as the weather has been too wet. Prices for crops grown for market have been rather lower than usual. Potatoes have been our most profitable crop, although not as profitable as usual, and strawberries our least profitable one. Considered as a whole, the season has not been a profitable one. Streams, springs and wells have recovered from the effects of drought.

Kingston (George L. Churchill). — The corn crop is two-thirds of the normal in value. Root crops have proved average yields. Farm stock is in very good condition. Fall seeding is in very good condition. Prices for farm crops have ranged as good as usual. Corn has been our most profitable crop and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for

our farmers. Streams, springs and wells have recovered from drought in a measure, but are not yet as full as usual.

Plympton (Winthrop Fillebrown). — The corn crop is about 75 per cent of the normal in value. Root crops are about 80 per cent of the normal in value, except potatoes. Farm stock is in excellent condition. Fall seeding is the best it has been for years. Prices are better than usual for all crops. Apples and corn have been our best crops, while potatoes were almost a failure. The season has not been a very profitable one for our farmers. The water supply is good. Owing to wet weather harvesting has been difficult, especially for rowen.

Carver (J. A. Vaughan). — The corn crop is an average crop in value. Root crops are not up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices for farm crops have been better than usual. Cranberries have been our most profitable crop. The season has been a profitable one, considered as a whole, because crops have brought good prices. Streams, springs and wells have recovered from the effects of drought. Continuous rains have interfered with harvesting all crops.

Mattapoisett (E. C. Stetson). — The corn crop is quite a little more valuable than usual, as corn and fodder are both high in price. Root crops are up to the usual average. Farm stock is in very good condition. Fall seeding is in good condition. Prices for crops raised for market have been a little higher than usual. Potatoes have been our most profitable crop and onions our least profitable one. Considered as a whole, the season has not been a very profitable one. Streams, springs and wells have fully recovered from the effects of drought.

BARNSTABLE COUNTY.

Falmouth (Daniel R. Wicks). — The corn crop is about up to the normal. Root crops are looking well and making good growth. Farm stock is looking finely, owing to an abundance of fall feed. Fall seeding is growing finely. Prices have been higher than usual for most crops. Potatoes have been our most profitable crop, owing to high prices, and hay our least profitable one. Perhaps the season has been a profitable one, all things considered. We have no lack of water at present. There has been no frost as yet and string beans, tomatoes and summer squash are growing as though it were June.

Mashpee (W. F. Hammond). — The corn crop is about average in value. Root crops have been about average. Farm stock is in good condition. Fall seeding is looking above the average. Prices on all market crops have been above the average. Potatoes and cranberries have been our most profitable crops and hay our least profitable one. Our farmers have just about held their own this season. Streams, springs and wells are about normal.

Dennis (Joshua Crowell). — The corn crop is perhaps 90 per cent

of the normal in value. Root crops are hardly up to the average. Farm stock is in good condition. Fall seeding is in fine condition. Prices for crops grown for market have compared favorably with other years. Cranberries have been our most profitable crop. Considered as a whole, the season has not been quite up to the average. Streams, springs and wells have recovered from drought to a great extent. Cranberry picking has been very much delayed by the unusual amount of moist weather and there are still quite a few on the vines.

Brewster (Thomas D. Sears). — The corn crop compares very favorably with a normal crop. Root crops are very good and above the average. Farm stock is looking very well. Fall seeding is looking well. Prices for farm crops are rather better than for the past few years. The potato crop has been our most profitable crop and cranberries and apples our least profitable crops. I think the season has been a profitable one for our farmers, taken as a whole. Streams, springs and wells have recovered from the effects of drought.

Wellfleet (E. S. Jacobs). — Corn is little raised, but is about normal. Nearly all root crops are below the average, turnips especially so. Farm stock is in average condition. Fall seeding is looking well. Prices have been above the average for about all crops. Melons and small fruits have been our most profitable crops and potatoes and squashes our least profitable ones. Early drought and late rainfall damaged all kinds of vegetables and the season has been unprofitable. Springs and wells are very low, but have somewhat improved.

Truro (John B. Dyer). — Indian corn is probably an average crop, but is not much raised. Root crops are average yields. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market are fully up to the average, perhaps better. Strawberries, apples and sweet corn have been our most profitable crops and potatoes and cranberries our least profitable ones. I think the season has been above the average for profit. Streams, springs and wells have recovered from the effects of drought. Truck gardening pays us the best of any line. All kinds of vegetables for Provincetown market sell well when the battleships make harbor there, and the summer boarders are also numerous.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — Indian corn is about 60 per cent of the normal in value. Root crops are much below the average. Farm stock is in good condition. Very little fall seeding has been done here. Prices for crops grown for market have been much higher than usual. Corn has been our most profitable crop and hay our least profitable one. Considered as a whole, the season has not been a profitable one for our farmers. Streams, springs and wells have recovered from the effects of drought.

BULLETIN OF
MASSACHUSETTS BOARD OF AGRICULTURE.

THE CULTIVATION OF MUSHROOMS.

ADAPTED FROM FARMERS' BULLETIN NO. 205 OF THE UNITED STATES DEPARTMENT OF AGRICULTURE, "THE CULTIVATION OF MUSHROOMS," BY B. M. DUGGAR, PROFESSOR OF BOTANY, IN THE UNIVERSITY OF MISSOURI.—ADAPTATION BY HOWARD N. LEGATE, FIRST CLERK.

In the United States the term "mushroom" refers commercially to but a single species (*Agaricus campestris*) of the fleshy fungi, a plant common throughout most of the temperate regions of the world, and one everywhere recognized as edible. It is unfortunate that this commercial use of the term "mushroom" restricts it to a single species. The erroneous statement is frequently made that there is one mushroom and that all other fleshy fungi are toadstools. In other cases any edible fungus is termed a mushroom, and all of the species not usually eaten are toadstools. It is better to consider all fleshy fungi as mushrooms and to apply special names to species with known qualities. It will be proper, therefore, to speak of *Agaricus campestris* as the cultivated mushroom, although it is very probable that in this country, as well as in foreign countries, several other species of mushrooms will in time be highly prized for cultivation.

The fully expanded plant, or mature mushroom, is well known everywhere. It consists of a centrally placed stalk or stipe of from 2 to 6 inches in height, usually not more than 1 inch in diameter, and on the end of this stipe there is borne an umbrella-shaped or cap-shaped portion known as the cap or pileus. The diameter and thickness of this pileus vary greatly in different races or varieties of the cultivated form, and also with the conditions of the environment under which it is produced. The general color of the plant varies in the different varieties from an almost pure white or cream to the forms which are deep brown, at least with reference to the upper surface of the cap. The stem is usually cream or white, and bears on its upper extremity, near the cap, a ring known as the annulus, which annulus forms a covering and protecting layer for the delicate under surface of the cap, to the edges of which it was attached previous to the rapid expansion and

maturity of the latter. The under surface of the cap is provided with leaf-like or grill-like projections, reaching for the most part from the stem to the periphery of the cap. These are termed gills, or "lamellæ." They are constantly pink in color in the white or cream-colored species up to the time of (and sometimes even a day after) the separation of the ring from the cap. Subsequently these gills turn brown and even a deep brownish black. In the brown variety the gills are at first grayish brown, but they also become almost black with age.

There are several distinct varieties of the cultivated mushrooms, which may be distinguished as a white, a brown and a cream-gray variety, known, respectively, by the trade names Alaska, Bohemia and Columbia.

Spores and Spawn.

The gills of the mushroom are covered with what appears to be a brownish-black powder, consisting of innumerable minute simple cells in the form of ovate bodies, termed "spores," which serve for the reproduction of the mushroom. Their function is that of reproducing the mushroom, but they should not be termed seeds. Their structure is so simple and they are in their development so distinct from seeds that spore is the proper designation for the reproductive bodies of all mushrooms, toadstools and the like.

As a rule, growers do not use these spores directly in growing the cultivated mushroom. Under favorable conditions, however, each minute spore is capable of germination and of producing a thread-like growth, which by subsequent branching and with extensive ramifications may produce in the course of weeks a spider-web-like, or thread-like growth, penetrating the soil, compost or other substratum upon which the spore happens to have germinated. When this thread-like growth which develops from the spore is of sufficient extent to be readily observed, it is known as "spawn." The spawn represents what may be termed the vegetative stage of the fungus. It may grow to a considerable extent, and during this growth it stores up nutriment. Under favorable conditions there are then formed, on threads growing near the surface, small pin-head or cushion-like areas of growth. These pin heads represent the earliest visible stages of what we know as mushrooms. With further growth and modifications they become the buttons which we find growing superficially upon the mushroom bed or bursting through the soil. From the pin-head stage to the fully expanded mushroom there may be a period of growth ordinarily requiring at least a week.

The mushroom differs much from our ordinary plants, there being no such organs as root, stem and leaf, and a well-differentiated body is only formed when the mycelial threads have stored up nourishment and are ready to develop the mushroom, or sporophore, which is to bear the reproductive bodies or spores. The spores have seldom been used in a commercial way. The spawn maker has depended upon

finding spawn in his pastures, or in his manure piles, or having it appear spontaneously, as it is termed, in prepared beds; and this spawn he has used in the propagation of other spawn by a process which we may liken to that of propagation by cuttings.

Commercial Mushroom Growing.

The successful cultivation of mushrooms in America has not been so general as in most European countries. It is in France and in England that the mushroom industry has been best developed. France is, properly speaking, the home of the present mushroom industry. Unusual interest has been shown in the United States in the growth of mushrooms within the past few years, and it is to be hoped and expected that within the next ten years the industry will develop to the fullest extent of the market demands. The latter will, of course, be stipulated and developed by the increasing popular appreciation of this product. In some cities and towns there is already a good market demand for mushrooms, while in others they may be sold only directly to special customers. This should be borne in mind by prospective growers.

Causes of Failure.

Success in mushroom growing depends on intelligent study of conditions and on experience. While many American growers have been successful in the production of mushrooms, a much larger number have failed. In most cases their failures have been due to one or more of the following causes: —

1. Use of poor spawn, or of spawn which has been killed by improper storage.
2. Spawning at a temperature injuriously high.
3. The use of too much water, either at the time of spawning or later.
4. Unfavorable temperature during the growing period.

It is therefore important to the prospective grower that careful attention be given to the general discussion of conditions which follows.

Temperature and Moisture.

Mushrooms may be grown in any place where the conditions of temperature and moisture are favorable. A shed, cellar, cave, or vacant space in a greenhouse may be utilized to advantage for this purpose. The most essential factor is that of temperature. The proper temperature ranges from 53° to 60° F., with the best 55° to 58° F. It is unsafe to attempt to grow mushrooms on a commercial basis, according to our present knowledge of the subject, at a temperature much less than 50° or greater than 63° F. Any severe changes of temperature retard growth, or else act injuriously, and many changes of temperature would entirely destroy the profits of the mushroom crop. From this it is

evident that in many places mushrooms may not be grown as a summer crop. With artificial heat they may be grown almost anywhere throughout the winter. Moreover, it is very probable that in this country open-air culture must be limited to a few sections, and restricted, commercially at least, to a single season.

A second important factor is that of moisture. The place should not be very damp, or constantly dripping with water. Under such conditions successful commercial work is not possible. A place where it is possible to maintain a fairly moist condition of the atmosphere, and having such capability for ventilation as will cause at least a gradual evaporation, is, by general practice and by the most extensive experimentation, shown to be necessary. With too rapid ventilation and the consequent necessity of repeated applications of water to the mushroom bed no mushroom crop will attain the highest perfection.

Caves, Cellars and Houses.

Caves, cellars and abandoned mines, or specially constructed houses, are used for growing mushrooms, because in such places only can the conditions of temperature and moisture be best regulated. Cold is less injurious to mushroom beds than heat. The former renders the bed for a time unproductive; but the latter stimulates the spawn to too rapid growth, which is usually followed by production of unsalable mushrooms, or the eventual death of the spawn, supposedly by damping off.

Mushrooms may often be grown in a very simply constructed shed or unused barn which will provide against any sudden changes of the temperature, and when it is possible to employ artificial heat the season for mushroom production in such structures may be greatly extended. Cellars are very commonly used in producing mushrooms for family use. Natural or artificial caves are of the first importance, however, for commercial work, since the situation of these below the surface will best insure a temperature throughout almost the entire year more or less close to that which is desired. In selecting caves or cellars, one should guard against the possibility of flooding or of too much seepage water during a rainy season. Perhaps the least satisfactory situation among those mentioned is the greenhouse. Under ordinary circumstances it heats too rapidly during days of warm sunshine, and, unless special precautions are taken, it is not to be generally recommended for amateurs. Nevertheless, during the fall and winter it is possible to grow mushrooms under the benches or in any other unused space with but very little outlay of money or labor. Cold frames may be also used to good advantage during the autumn or spring. The natural caves of this country and abandoned coal mines in some sections should be further investigated with relation to their adaptability for the commercial production of mushrooms. A thorough study should also be made of open-air conditions.

In the construction of special mushroom houses any one of a variety of plans may be followed, and the selection of style will depend upon its cheapness and efficiency in the particular locality.

Preparation of the Manure.

It should be borne in mind that while there are many methods leading to failure there are a number leading to success. In fact, persons succeed in mushroom growing by methods which seem absolutely different. It is essential that the physiological conditions of growth be understood, and then good judgment must be depended upon.

In the growing of mushrooms for commercial purposes the beds should be constructed of stable manure which has been fermented or composted. Many experiments have been made looking toward the substitution of other composts or waste products for stable manure, but nothing has yet been found which may be more highly recommended. Fresh manure should be obtained, and this should include the litter used for bedding the animals, unless the latter consists of coarse weeds. It is a great mistake in a commercial way to attempt to use manure free from straw. Again, stable manure which has been well trampled is nearly always well preserved, and is frequently much richer than any other kind.

The manure should be piled in heaps about 3 feet deep when well pressed down with the fork, and these piles may be of considerable extent. It should be watered until well moistened throughout, but not drenched. In the course of four or five days or a week it will be necessary to fork over or "turn" the manure. A second turning will be required usually in from seven to ten days, and it may be necessary to water again if the material has suffered considerable drying out. If well pressed down and merely moist, the manure will not burn, and, moreover, there will be no tendency for a sour fermentation to become established. In from fifteen to twenty-one days, depending upon conditions, the temperature will begin to fall, the violence of decomposition will begin to show a subsidence, and the compost will be ready for the construction of the beds. The bacteria of rapid decay will become less and less abundant, and finally, when the beds are prepared as subsequently described, the spawn will be able to grow in spite of the bacteria present.

It is the custom with some growers to mix a small quantity of loam, about one-fourth, with the manure. This enables one to use the manure earlier; and, indeed, under such circumstances it may sometimes be used with but little or no composting. Nevertheless, the majority of growers have obtained greater success by the use of the manure alone, and this is also the writer's experience. Very well rotted compost should not be used in mushroom growing if large and solid mushrooms are desired. When sawdust or shavings are employed

for bedding the animals, the composting may require a somewhat longer period.

The manure is always ready for the construction of beds when the above conditions have been fulfilled, or when nearly all objectionable odors are lost and a sweet fermentation, as growers term it, has begun.

Preparing the Beds.

Mushroom beds are of two general types, (1) the flat bed, frequently referred to as the English, and (2) the ridge bed, known as the French type. In making the former the entire floor space may be utilized as a bed, and the beds may be arranged in the form of tiers or shelves. In low cellars or caves, or wherever the amount of floor space is not the most important consideration, it would be well to avoid the use of shelves; but where the amount of floor space is an important factor they may be adopted to advantage, although the additional labor involved in the growing of the crop under such conditions is an item to be considered. When shelves are used one should be careful to whitewash these after each crop in order to avoid the increased danger from insect depredations. In any case flat beds should be made from 8 to 10 inches deep. Ridge beds enable one to get a somewhat greater surface space in a given area, but they are also more expensive so far as the labor of construction is concerned. Nevertheless, under many circumstances they are obviously desirable. They should be about 2 feet wide at the base, tapering gradually to the apex, and not more than about 18 to 20 inches high when compressed and cased. The custom is to make two such beds in contact, and then leave a walk way of 8 or 10 inches between the next two, and so on till the space is occupied. Next to the walls slanting beds may be prepared.

In any case, the manure is made up in the form of the bed desired, and should be firmed or compressed to some extent immediately, in order to prevent drying out and burning when the secondary fermentation takes place. At this time the manure should be neither wet nor dry, but merely moist. The only practical test of the proper moisture content of the manure which can be relied on is when upon compression water cannot readily be squeezed out of it.

Spawning.

After the beds are prepared the temperature should be, and it usually will be, too high for spawning. After a sudden rise the temperature should gradually fall during the course of the week or more to about 70° or 75° F. At this temperature spawning may take place, but under absolutely no circumstances should a bed be spawned at a temperature greater than 80° F. If brick spawn is used, the bricks are broken into pieces about 2 inches square, or into from 10 to 12 pieces per brick. These pieces are inserted from 1 to 2 inches

below the surface, about 10 inches to 1 foot apart, and the bed is then compressed into final shape. Under most favorable circumstances it is unnecessary and undesirable to water the beds for several weeks after spawning, or until they are loamed or cased. If they dry out rapidly and some water is necessary, it should be given as a surface spraying, for water in quantity applied to the young spawn will almost invariably cause the latter to damp off.

Casing the Beds.

An examination of the bed about two weeks after spawning is desirable, and if it is found that the spawn is "running" the beds may be cased with loam. Casing consists in applying a layer of loam from 1 to 1½ inches deep to the surface of the bed. This loam should have been secured some time in advance and carefully worked over or screened to get rid of the largest pebbles, lumps and trash. When applied it should be barely moist. Subsequently, if watered at all, it should be merely sprinkled, in order to prevent any drying out of the bed. Neither a heavy clay nor a sandy loam should be used for casing purposes, but almost any other soil is good.

Watering.

As previously indicated, the spreading spawn should receive no water, or, at least, as little as possible. When, however, the mushrooms begin to appear, more water will be required, and a light sprinkling may be given once or twice each week or as often as the conditions demand. Beds which come into bearing in proper condition should never be drenched. It has been found by experience that under the most favorable conditions a bed will require occasional sprinkling, since, owing to continual evaporation, there will be a gradual loss of water, at least after the mushrooms have been gathered, and the loam disturbed by the removal of mushrooms should always receive a light sprinkling.

Picking and Preparing for Market.

When a bed is in full bearing, the mushrooms should be gathered, at least once in two days, and it is well to pick them every day, particularly if the temperature is up to 60° F. or more. Picking is itself an art, and the intelligent grower will soon find that the yield of a bed may be greatly lessened by lack of judgment in picking. To satisfy the general demands of our markets at the present time it is not recommended to take the buttons; yet if there is a fancy trade for these it should be met. Little or no gain in weight occurs in the mushroom, however, after the veil begins to break, so that mushrooms should not be left after this time. Flat tops are a third-grade article, but these, as well as all defective mushrooms, should be sedulously removed from the bed every day.

In picking, grasp the mushroom by the cap (a large one by both cap and stem), twisting it to remove it easily from the soil. Where the mushrooms come up in large united clusters, it will be best to cut them, in order not to disturb the mycelial connections of all. Some good growers practice "cutting" throughout, but the stubs must decay and are a source of danger. After all good mushrooms from a cluster have been taken, remove any fleshy spawn masses adhering and add fresh loam.

As they are picked, the mushrooms are put into shallow baskets and taken to a sorting and packing table. The stems are cut off and any adhering loam is brushed from the cap. It is true that mushrooms keep somewhat better if the stub is left attached and the loam removed by rubbing, but except in special cases this procedure is not to be recommended. It is not necessary to cut the stem off short, but the market demands that there shall be few long shanks.

For the best trade it is desirable to "sort" the mushrooms, placing only those of nearly the same size in the same package. It is certainly not well to pack together "broilers" and buttons, if this can be avoided. Defective mushrooms should be invariably thrown out. Mushrooms should be treated as a first-grade product in every way, and therefore the package must be attractive. If the time involved in shipment is not very long, they may be put into 5-pound boxes arranged in crates as prepared for fruit. Shipment may also be made in boxes of sizes demanded by the general or private trade. Baskets afford excellent ventilation, yet boxes are often to be preferred. If the latter are lined with a blue paraffin or oiled paper, a good color contrast will result and the package will be made much more attractive.

Market Prices.

The prices paid for mushrooms in America are unusually variable. Perhaps it is fair to say that one should consider from 35 to 50 cents per pound a good average price. In many cities and towns 30 cents would be as much as could be obtained. On the other hand, a price of 75 cents is frequently paid. The unusual quotation of $1 or more is not to be expected. It is true that for a fine grade of mushrooms such prices are paid to retailers by the fancy trade, and during special seasons or for special occasions. The grower may well look for the time, however, when the market demands will support a generous supply at a constant but fair price.

The Period of Production.

Under favorable circumstances, a bed may come into bearing within six weeks. It usually requires, however, a longer period, and eight weeks may more nearly represent the average conditions. If the conditions have been variable, and especially if at times a very low temperature has prevailed, bearing may be still further delayed.

Again, the period of production or the profitable "life" of a successful bed may vary greatly, ranging from five weeks to as many months. As a rule, a bed which produces fine heavy mushrooms will bear longer than one that yields plants of lighter weight. Many growers think that there is profit in a bed which yields one-half pound per square foot of surface. One should not be satisfied with less than this, and if the best conditions prevail this yield is far below what should be obtained. Two pounds per square foot is an excellent yield, and some of our growers report this amount.

Old Beds.

When a bed has ceased to bear, or is no longer profitable commercially, it should be taken down and every particle of the bedding and casing materials removed from the cave, cellar or house. The manure is still valuable for field and garden purposes, but it is wholly useless and even dangerous for mushrooms, because it is not only exhausted with reference to mushroom growing, but may also harbor the diseases or enemies of the mushroom. When the bed is removed the house should be thoroughly cleaned, and, if possible, sprayed or fumigated. If conditions remain constant there is then no reason why another crop should not follow immediately.

Mushroom Enemies.

With vigilance and cleanliness the mushroom bed usually resists diseases or insect depredations. Fogging off is supposed to be caused by some lack of essential conditions, and in the pin-head or button stage, the mushrooms turn brown, cease to grow and soon decay. It is most frequent in warm weather. Black Spot manifests itself by the appearance of small, discolored areas on the surface of the cap, and is said to be due to improper watering and lack of ventilation.

Mites are constantly found in compost heaps, but are sluggish and seldom troublesome at a temperature of less than 59° F. Wood lice are not of great importance under favorable conditions of temperature, and may be exterminated by trapping and poisoning with pieces of potato smeared with arsenic or Paris green, and placed in tin cans or boxes. Snails and slugs are frequent pests, but are readily trapped by the use of lettuce or cabbage leaves. Springtails may be a source of great annoyance in damp caves, but usually only establish themselves where carelessness has been shown in cleaning out old bedding material. When present they may be readily destroyed by fumigation with carbon bisulphid. Larvæ of flies are not of great importance, though that of the little fly, *Phora minuta*, may be troublesome in warm weather, when fumigation may be practiced to extend the life of the bed somewhat later.

Mushroom Spawn.

In mushroom growing one of the first requisites is that of securing a fresh, reliable spawn. The material is easily injured by even brief storage under unfavorable conditions. Most of the spawn used in this country is imported, and the English brick spawn is usually used as it stands transportation and storage better than the French flake spawn, which consists merely of the loose composted material, equivalent to ordinary bedding material, through which the mycelium of the fungus has grown abundantly. There is nothing in our climate to render the manufacture of mushroom spawn difficult in America, and good brick spawn is now being made. The important thing is to secure the so-called virgin spawn, or a new growth of the mycelium of *Agaricus campestris*. As usually done this leaves to chance the quality and other characters of the mushrooms grown from the spawn. If mushrooms are found growing in lawns or pastures, small trenches are dug beneath the sod and these are filled with rich manure, with the hope that the vigorous-growing mycelium will penetrate this manure in the course of a few weeks. This usually occurs, and the spawn is said to be very good when production of mushrooms from it is prevented, and, if possible, from any mycelium in the vicinity. When the manure is well penetrated by the mycelium it may be removed and dried, and may be used for the inoculation of spawn bricks, or for the inoculation of small beds. These methods leave too much to chance and there is room for much development along pure culture lines. The "tissue-culture" method consists of filling test tubes or large mouth bottles with fresh stable manure or compost, sterilizing with steam, taking vigorous, well-flavored mushrooms, and with sterilized scalpel and forceps removing with great care bits of the tissue of the mushroom and placing them in the manure in the sterilized tubes. Under favorable conditions the mycelium will start in a few days, and will spread to all the material in the bottle in three or four weeks, when it may be used as pure-culture virgin spawn.

The Manufacture of Brick Spawn.

The bricks should be solid and compact and with no cracks or irregularities in the surface. In order to secure bricks of this kind and the best growth of mycelium, it has been found by experience that a mixture of manure from the cattle shed and from the stable is desirable. This is usually mixed in the proportion of two-thirds of the former to about one-third of the latter, a small quantity of loam being sometimes added. In making the bricks, the material should be somewhat less composted than for making mushroom beds, and it needs to be well selected and raked over, since too much straw in the brick will render it brittle and liable to crack. The mixing of the dried materials is an important process and should be carefully done. The bricks are

molded in a frame of the size desired, the material being pounded into the frame by means of a mallet. If one follows the most common method, the bricks are only slightly dried, and then spawned. A piece of virgin spawn is inserted at either end, immediately after which they are rapidly dried before being stacked for the growth of the spawn. By another process the bricks are immediately dried without the insertion of the spawn material, which is later placed in depressions made between two adjacent bricks as they are being stacked for the growth of the spawn. In stacking, the bricks are arranged in layers of one or two bricks in thickness, depending upon the method of spawning. Upon each layer there is placed a very thin stratum of fresh manure containing a little clean straw. After the layer of manure is added a very slight watering with a rose spray is given. The whole is then covered with clean straw or litter and left for several weeks, when, under favorable conditions, it should be found upon investigation that the spawn has "run" throughout the brick. Occasional examination of the bricks should be made where experience is lacking, in order to see that they are not too moist and that the growth may not go too far. When properly made the bricks should be well penetrated by a mold-like growth of mycelium. A considerable cording or threading of the mycelium indicates unfavorable conditions, or that the growth has progressed too far. The latter usually means that the spawn may not prove as vigorous as is desirable.

Storage of Spawn.

It is possible to ruin good spawn by improper storage, even in a relatively short period of time. Spawn should be kept in a place that will be both cool and dry, but never hot and dry. This should be remembered by both seedsmen and growers, for many failures may undoubtedly be attributed to the improper storage to which the material has been subjected.